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THE BLOOD-PRESSURE IN DIPHTHERIA.

By J. D. ROLLESTON, M.D.,

*Assistant Medical Officer, Grove Hospital, London.*

*Historical note.*—Friedemann (1893), working with von Basch's sphygmomanometer, examined 63 children suffering from diphtheria in Heubner's clinique at Leipzig. He found that small oscillations occurred in all cases, but that there were no grounds for anxiety, as long as they were within 5–10 mm. Hg. Provided that the blood-pressure did not sink below 90 mm. in big children, and below 75 mm. in small ones, the prognosis was not unfavourable. Cases showing a reading of 65 or 60 mm. were almost invariably fatal. Friedemann was of opinion that the diagnosis of cardiac involvement and the establishment of convalescence could be made much earlier by the sphygmomanometer than by ordinary clinical methods.

Biernacki (1899) investigated 26 cases, 6 of which were fatal, with the pocket form of Hill and Barnard's instrument, and found that in fatal cases the incidence and intensity of toxic symptoms bore a definite relation to the fall of blood-pressure.

Durand-Viel (1903) used Potain's instrument on 55 diphtheria patients, whose ages ranged from  $3\frac{1}{2}$  to 14 years, and found that a fall of pressure took place in every form of diphtheria, mild or severe. The fall was relatively more marked in older children and in severe forms of the disease.

Denis (1903), from observations on 400 children in Marfan's diphtheria wards, arrived at similar conclusions.

Taddei (1904) used Riva-Rocci's original instrument on 164 children, including 14 laryngeal cases before and after intubation. He found that the hypotensive action of diphtheria toxin was not always present in every form of the disease. In mild cases the blood-pressure was almost normal, in moderate cases the depression was slight, and of brief duration, while in toxic forms the hypotension was very marked, though it might be preceded by a slight rise during the febrile stage. The arterial tension bore an inverse relation to albuminuria; the more persistent and massive the albuminuria, the longer and more marked the hypotension. In laryngeal cases the pressure rose until intubation, was at its maximum during the operation, and then gradually fell.

Weigert (1907) examined 46 cases with Gärtner's tonometer. In the mild and uncomplicated cases the pressure on the whole was not affected; in some there was a slight rise during the febrile period. Similar results were obtained in cases with more or less severe myocarditis, in which on the average the pressure did not sink lower than in the mild cases. In 4 fatal cases very low readings were registered (50 mm. in a child aged 11 years, 45 mm. in one aged 9 years, and 40 mm. in one aged 2 years.) Although the patients who recovered did not have such a low blood-pressure as the fatal cases, Weigert did not think that much prognostic value should be attached to sphygmomanometry in diphtheria.

Brückner (1909) examined about 200 cases of diphtheria in the Dresden Children's Hospital with Gärtner's tonometer. At the beginning of the disease he found either a rise with subsequent fall or a subnormal reading from the first. Subsequently the blood-pressure behaved in various ways. Horizontal readings were found in uncomplicated cases, and in those with slight cardiac disturbance. In fatal cases the blood-pressure showed a steadily downward course. Like Weigert, Brückner concluded that the estimation of the blood-pressure in diphtheria is of less value than examination of the heart, liver, and urine, and attention to the patient's colour and general condition.

The present paper is based on observations made on 179 cases of diphtheria admitted to the Grove Hospital in the course of the last eighteen months (July, 1909, to December, 1910). The blood-pressure in each case was taken with C. J. Martin's modification of Riva-Rocci's sphygmomanometer. The systolic pressure, as measured by disappearance of the radial pulse, was alone taken into consideration.

As far as possible the measurements were taken at the same time each day between 10.30 a.m. and noon, *i. e.* from 1½ to 5 hours after food; in many cases an evening record between 6.30 p.m. and 7 p.m. was also made. The blood-pressure was taken daily in each case until the patient was allowed to sit up, *i. e.* for a period ranging from three weeks in the mild cases to six or eight weeks in the severe. Comparative observations were subsequently made on the different readings in the recumbent and erect positions. Apart from the early fatal cases the total period of observation in each case ranged from four to fourteen weeks.

*Age and sex.*—Table I shows that all the patients, except 15 who were above the age of fifteen years, were children. Ninety were males, 89 were females. There was no appreciable difference in the blood-pressure of any two individuals of different sexes, but of the same age and suffering from attacks of diphtheria of equal severity.

TABLE I.

| Years.          | Males. | Females. |
|-----------------|--------|----------|
| 0-1 . . . . .   | 1 .    | 0        |
| 1-2 . . . . .   | 2 .    | 3        |
| 2-3 . . . . .   | 9 .    | 4        |
| 3-4 . . . . .   | 8 .    | 3        |
| 4-5 . . . . .   | 9 .    | 14       |
| 5-6 . . . . .   | 17 .   | 21       |
| 6-7 . . . . .   | 5 .    | 9        |
| 7-8 . . . . .   | 9 .    | 12       |
| 8-9 . . . . .   | 3 .    | 4        |
| 9-10 . . . . .  | 6 .    | 4        |
| 10-11 . . . . . | 5 .    | 0        |
| 11-12 . . . . . | 2 .    | 3        |
| 12-13 . . . . . | 3 .    | 2        |
| 13-14 . . . . . | 2 .    | 0        |
| 14-15 . . . . . | 3 .    | 1        |
| 15-47 . . . . . | 6 .    | 9        |
|                 | —      | —        |
|                 | 90 .   | 89       |

*Normal blood-pressure.*—As the blood-pressure of the patients prior to their attack of diphtheria was not known, it is necessary to compare the readings taken with those made by other observers on normal children.

Table II shows the figures obtained by Seiler from observations on normal children with Riva-Rocci's instrument.

TABLE II.

| Years.          | Maximum pressure.<br>mm. Hg. |
|-----------------|------------------------------|
| 2-3 . . . . .   | 75-80                        |
| 4-5 . . . . .   | 79-90                        |
| 6-7 . . . . .   | 85-95                        |
| 8-9 . . . . .   | 90-95                        |
| 10-11 . . . . . | 93-96                        |
| 12-13 . . . . . | 94-106                       |
| 14-15 . . . . . | 93-104                       |
| 15-16 . . . . . | 103-120                      |

The figures of Cook and Briggs obtained with their own modification of Riva-Rocci's instrument are somewhat higher. According to them the blood-pressure of children up to two years was from 75-90 mm., for children after two years 90-110 mm., and for young adults 130 mm. In women the blood-pressure was 10-15 mm. lower than in men.

*Blood-pressure in diphtheria.*—Of the 179 cases, 63, or 35·1 per cent., according to Cook and Briggs's estimate, and 45 cases, or 25·1 per cent., as judged by Seiler's standard, showed for varying periods a pressure inferior to the normal. Owing to the well-known depressive effects of diphtheria toxins these figures may appear surprisingly low, but are to be explained by the inclusion of a large number of mild cases, in whom the blood-pressure was not lowered in the course of their illness. As will be shown below, the varying degrees of depression bore a direct relation to the severity of the attack, being pronounced and persistent in the severe, and slight and transitory in the mild cases.

Of those whose blood-pressure was not lowered, 36 cases, or 20·1 per cent., according to Seiler's standard showed a reading which always exceeded the normal. Judged, however, by the more liberal estimate of Cook and Briggs the pressure of these cases did not persistently rise above the normal limits.

*Classification of cases.*—The cases have been ranged according to the severity of the faucial attack in the following 4 classes:

TABLE III.

|                   |                       |           |
|-------------------|-----------------------|-----------|
| Class I . . . . . | Very severe . . . . . | 22 cases. |
| „ II . . . . .    | Severe . . . . .      | 59 „      |
| „ III . . . . .   | Moderate . . . . .    | 41 „      |
| „ IV . . . . .    | Mild . . . . .        | 57 „      |

*Affection of blood-pressure in each class : Class I.*—The hypotensive effect of diphtheria was naturally most marked in this class; 18 cases, or 81.1 per cent. according to Cook and Briggs's standard, and 17, or 77.2 per cent. according to Seiler's, showed readings from 5 to 45 mm. below the normal. The fall in pressure occurred rapidly and steeply, and was considerable from day to day, *e. g.* from 110 mm. on the second day to 68 mm. on the third, or there might be a difference of over 10 mm. between the morning and evening readings, or lastly—and this was of still graver prognosis—a marked difference between the readings at the two wrists.

The following readings may be regarded as typical of early fatal cases in this class:

TABLE IV.

| Age.    | Day of<br>disease on<br>admission. | Blood-<br>pressure on<br>admission. | Subsequent records.                                                                     |
|---------|------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------|
| 5 years | 4th                                | 110                                 | 106, 102, 94, 86 morn., 70 morn., 40, 68.<br>70 even., 50 even.<br>Death on 11th day.   |
| 6 „     | 10th                               | 100                                 | 100, 90, 80, 70 R. wrist, 70 R. wrist<br>60 L. wrist, 50 L. wrist<br>Death on 17th day. |
| 7 „     | 5th                                | 110                                 | 110, 110, 100, 90, 90, 86, 80, 70, 90,<br>66.<br>Death on 15th day.                     |

In cases which recovered the pressure after the initial fall tended to remain stationary apart from slight oscillations, probably of psychical origin, before returning to the normal level. As will be seen below, a subsequent fall preceding or accompanying the late paralysis, which was naturally most frequent in this class, was very exceptional.

None of the cases in this class showed readings above the normal, except during the first few days of the disease. In every case the pressure was lower than on admission by the time the throat was clean or before death, in 2 by 10 mm.; in 2 by more than 10, but less than 20 mm.; in 2 by 20 mm.; and in 8 by 30 to 60 mm. The difference between the highest and lowest records in any one case was considerable, *e. g.* in 1, 30 mm.; in 7, 40 to 50 mm.; in 1, 60 mm.; and in 1, 70 mm.

*Class II.*—The fall in pressure, though less marked than in

Class I, was still considerable; 25 cases, or 42·3 per cent., according to Cook and Briggs's standard, and 16 cases, or 27·1 per cent., according to Seiler's, showed readings varying from 3 to 24 mm. below normal during a period of from 1 to 41 days' duration. The lesser degree of hypotension than in Class I is shown by the following figures: In 16 the pressure on the day on which the throat was clean was the same as on admission, in 14 it was 10 mm. or less than on admission, and in 12 the fall exceeded 10 mm. by amounts varying from 14 to 30 mm. The greatest difference between the highest and lowest readings was 40 mm., which was found in 4 cases.

The course of the blood-pressure in the acute stage is illustrated in the following table:

TABLE V.

| Age.               | Day of disease on admission. | Blood-pressure on admission. | Subsequent readings in acute stage. |
|--------------------|------------------------------|------------------------------|-------------------------------------|
| 5 years            | 6th                          | 130                          | 120, 120, 106.                      |
| 5 "                | 7th                          | 100                          | 90, 90, 84, 80.                     |
| 8 "                | 8th                          | 110                          | 100, 100, 100, 90.                  |
| 9 "                | 8th                          | 100                          | 90, 80, 70.                         |
| Death on 10th day. |                              |                              |                                     |
| 15 "               | 4th                          | 122                          | 116, 120, 110, 116, 110, 104.       |

*Class III.*—The fall in pressure was still less marked than in Class II; 11 cases, or 26·8 per cent., according to Cook and Briggs's standard, and 6 cases, or 14·6 per cent., according to Seiler's, showed a subnormal reading of from 1 to 14 mm. for a period varying from 2 to 37 days.

The greatest difference between the highest and lowest readings was 38 mm., which was registered in 1 case. In only 4 faucial cases was there a difference of more than 20 mm. between the two extremes. Among the purely faucial cases the pressure on the day on which the throat was clean was the same as on admission in 8, in 2 it was higher, and in 19 it was lower by from 10 to 20 mm.

TABLE VI.—Shows Typical Readings in the Acute Stage.

| Age.    | Day of disease on admission. | Blood-pressure on admission. | Subsequent readings in acute stage. |
|---------|------------------------------|------------------------------|-------------------------------------|
| 4 years | 4th                          | 110                          | 102, 100, 92.                       |
| 6 "     | 3rd                          | 110                          | 112, 104, 102, 100.                 |
| 7 "     | 2nd                          | 120                          | 110, 124, 120, 110.                 |

*Class IV.*—The blood-pressure was least affected in this class; in only 2 cases, or 5·2 per cent., according to Seiler's standard, and 8 cases, or 15·7 per cent., according to Cook and Briggs, was a subnormal reading registered. According to Seiler's standard the fall never exceeded 5 mm., nor lasted more than two days, according to Cook and Briggs's standard the fall did not exceed 10 mm., and was present from 3 days to a month. In 17 cases, or 29·8 per cent., according to Seiler's scale, the pressure was always above normal; while according to Cook and Briggs, though occasionally, it was never persistently so.

In 16 of the purely faucial cases the pressure on the day on which the throat was clean was the same as or less than 10 mm. than on admission, and in 5 there was a rise of 10 mm. or less. In only 5 did the difference between the highest and lowest reading in any case reach 30 mm.; in 19 it ranged from 20 to 30 mm., and in 9 from 10 to 20 mm.

TABLE VII.—*Shows Typical Readings in the Acute Stage.*

| Age.      | Day of disease on admission. | Blood-pressure on admission. | Subsequent readings in acute stage. |
|-----------|------------------------------|------------------------------|-------------------------------------|
| 2 years . | 6th .                        | 96 .                         | 96, 100, 102                        |
| 5 „ .     | 2nd .                        | 100 .                        | 102, 100, 90, 110                   |
| 6 „ .     | 3rd .                        | 100 .                        | 100, 100, 100, 100                  |
| 7 „ .     | 2nd .                        | 104 .                        | 110, 110, 110, 110                  |
| 8 „ .     | 2nd .                        | 108 .                        | 110, 110, 106, 106                  |

*Date of highest and lowest blood-pressure.*—The following tables show the date at which the maximum and minimum blood-pressures in each class were registered. In the overwhelming majority the highest reading was obtained in the first week, and the lowest in the second week.

TABLE VIII.—*Showing the Number of Cases in Each Week in which Highest Readings were Recorded.*

|          | 1st week. | 2nd week. | 3rd week. | 4th week. | 5th week. | 6th week. | 7th week. | 8th week. |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Class I. | 17 .      | — .       | 2 .       | 2 .       | 1 .       | — .       | — .       | — .       |
| „ II.    | 40 .      | — .       | 6 .       | — .       | — .       | 8 .       | 4 .       | 1 .       |
| „ III.   | 31 .      | 4 .       | 0 .       | 1 .       | 1 .       | 4 .       | — .       | — .       |
| „ IV.    | 42 .      | 7 .       | 1 .       | 3 .       | 2 .       | 2 .       | — .       | — .       |
|          | —         | —         | —         | —         | —         | —         | —         | —         |
|          | 130       | 11        | 9         | 6         | 4         | 14        | 4         | 1         |

TABLE IX.—*Showing the Number of Cases in Each Week in which Lowest Readings were Recorded.*

|          | 1st<br>week. | 2nd<br>week. | 3rd<br>week. | 4th<br>week. | 5th<br>week. | 6th<br>week. | 9th<br>week. | 10th<br>week. |
|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Class I. | 4 .          | 14 .         | 3 .          | 1 .          | — .          | — .          | — .          | — .           |
| „ II.    | 7 .          | 29 .         | 13 .         | 3 .          | 3 .          | 2 .          | 1 .          | 1 .           |
| „ III.   | 7 .          | 21 .         | 5 .          | 8 .          | — .          | — .          | — .          | — .           |
| „ IV.    | 15 .         | 33 .         | 7 .          | 2 .          | — .          | — .          | — .          | — .           |
|          | —            | —            | —            | —            | —            | —            | —            | —             |
|          | 33           | 97           | 28           | 14           | 3            | 2            | 1            | 1             |

In 97 of the 130 cases admitted in the first week of disease and in 10 of the 15 cases admitted in the second week, the highest reading was the first taken. The occurrence of the comparatively high pressures in the first week is to be attributed partly to the febrile disturbance of the acute stage before the diphtheria toxins had had time to produce their characteristic effect, and partly to the psychical action caused by the application of an unfamiliar instrument, the latter fact accounting for the highest reading being usually obtained on the first measurement. The preponderance of the lowest readings in the second week accords with the clinical fact that this is the time of predilection for the so-called "cardiac paralysis," which should more accurately be called vaso-motor paralysis, the heart failure being secondary to the vaso-motor affection. All forms of this palsy may exist, and in accordance with the rule in diphtheritic paralysis, only a small minority prove fatal. Apart from one case of diaphragmatic paralysis, all the deaths in the present series were due to this cause, fifteen occurring in Class I, and two in Class II, constituting a mortality of 9·4 per cent. As regards the highest pressures recorded, it may be noted that in two neurotic sisters, aged 9 and 7 years respectively, the readings ranged between 130 and 148 mm. Hg. for a month. Another neurotic child, a boy, aged 10 years, had a pressure of from 126 to 144 mm. from the twenty-second to the forty-ninth day of disease.

The lowest reading in a case which recovered was 60 mm., which was registered on one occasion in a girl, aged 3 years. In only ten other cases which recovered did the pressure fall below 80 mm. in patients above the age of 2 years. Two of these belonged to Class I, five to Class II, and three to Class IV.

The date at which the pressure in forty cases returned to the normal, according to Cook and Briggs's standard, after the initial fall is shown in Table X, from which it is seen that in the great majority the normal tension was regained by the end of the seventh week.

TABLE X.

|          | 2nd<br>week.<br>Cases. | 3rd<br>week.<br>Cases. | 4th<br>week.<br>Cases. | 5th<br>week.<br>Cases. | 6th<br>week.<br>Cases. | 7th<br>week.<br>Cases. | 8th<br>week.<br>Cases. | 9th<br>week.<br>Cases. | 11th<br>week.<br>Cases. |
|----------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
| Class I. | —                      | 2                      | 1                      | —                      | —                      | —                      | —                      | —                      | 1                       |
| „ II.    | 2                      | 2                      | 1                      | 4                      | 4                      | 2                      | —                      | 2                      | —                       |
| „ III.   | 2                      | 2                      | 1                      | 1                      | 1                      | 4                      | 2                      | —                      | —                       |
| „ IV.    | 2                      | 1                      | 1                      | 1                      | —                      | 1                      | —                      | —                      | —                       |
|          | —                      | —                      | —                      | —                      | —                      | —                      | —                      | —                      | —                       |
|          | 6                      | 7                      | 4                      | 6                      | 5                      | 7                      | 2                      | 2                      | 1                       |

*Relation of blood-pressure to pulse-rate.*—The blood-pressure being much more stable than the pulse-rate, it is not surprising that there should be no exact relation between them. As a general rule, however, the highest pulse-rate, like the highest blood-pressure, occurred during the first week of disease, and the lowest pulse-rates were found in the second week, when the blood-pressure was usually lowest. The following tables show the exact figures.

TABLE XI.—Showing Weeks of Highest Pulse-rate.

|          | 1st<br>week.<br>Cases. | 2nd<br>week.<br>Cases. | 3rd<br>week.<br>Cases. | 4th<br>week.<br>Cases. | 5th<br>week.<br>Cases. | 6th<br>week.<br>Cases. | 7th<br>week.<br>Cases. |
|----------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Class I. | 17                     | 3                      | 1                      | 1                      | —                      | —                      | —                      |
| „ II.    | 41                     | 9                      | 2                      | 1                      | 2                      | 3                      | 1                      |
| „ III.   | 32                     | 6                      | 1                      | 2                      | —                      | —                      | —                      |
| „ IV.    | 51                     | 3                      | 1                      | —                      | 1                      | —                      | 1                      |
|          | —                      | —                      | —                      | —                      | —                      | —                      | —                      |
|          | 141                    | 21                     | 5                      | 4                      | 3                      | 3                      | 2                      |

TABLE XII.—Showing Week of Lowest Pulse-rate.

|          | 1st<br>week.<br>Cases. | 2nd<br>week.<br>Cases. | 3rd<br>week.<br>Cases. | 4th<br>week.<br>Cases. | 5th<br>week.<br>Cases. | 6th<br>week.<br>Cases. |
|----------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Class I. | 7                      | 10                     | 3                      | 1                      | 1                      | —                      |
| „ II.    | 3                      | 38                     | 8                      | 7                      | 2                      | 1                      |
| „ III.   | 4                      | 22                     | 11                     | 3                      | 1                      | —                      |
| „ IV.    | 7                      | 38                     | 10                     | 1                      | 1                      | —                      |
|          | —                      | —                      | —                      | —                      | —                      | —                      |
|          | 21                     | 108                    | 32                     | 12                     | 5                      | 1                      |

*Comparative readings in the recumbent and erect positions.*—Table XIII shows the readings in the recumbent and erect positions in 103 patients in whom these comparative observations were made.

TABLE XIII.

|          | Cases<br>examined. | Both readings<br>same. | Recumbent<br>higher than<br>erect. | Erect higher<br>than<br>Recumbent. |
|----------|--------------------|------------------------|------------------------------------|------------------------------------|
| Class I. | 4                  | 2                      | 1                                  | 1                                  |
| „ II.    | 39                 | 18                     | 12                                 | 9                                  |
| „ III.   | 29                 | 14                     | 5                                  | 10                                 |
| „ IV.    | 31                 | 14                     | 14                                 | 3                                  |
| —        | —                  | —                      | —                                  | —                                  |
|          | 103                | 48                     | 32                                 | 23                                 |

It is noteworthy that whereas in normal persons the pressure in the erect position is 5 to 10 mm. higher than in the recumbent (Janeway, Cooke and Briggs), in a large percentage of the present series the two readings were either the same, or the reading in the recumbent was higher than in the erect position by from 2 to 20 mm.

Thus, out of 103 in whom the comparison was made, in 48 the two readings were the same, in 32 the readings when recumbent were higher than when erect, and in only 23 was the normal relation found.

This paradoxical result was by no means confined to the severe cases, and was even more frequent in the mild, but this may have been due to the fact that members of Classes I and II were kept in bed for a much longer time than those of Classes III and IV, who were usually allowed to get up in the course of the third or beginning of the fourth week. The prolonged rest in bed which was enforced in the severe cases probably enabled their cardio-vascular system in some cases to make a more complete recovery from the infection than had been realised in the milder cases. As a rule, however, the normal condition was finally re-established before discharge from hospital, though a period might intervene in which the highest reading might be found sometimes in the one and sometimes in the other position.

This reversal of the ordinary relations between the erect and recumbent readings is liable to occur in convalescence from any acute disease. It is interesting to note as illustrating a similar cardio-vascular instability in convalescence from scarlet fever, that among 80 patients under my care, the paradoxical reading was found in 34 cases, or 42.5 per cent. In 18 of these the readings were the same in both positions, and in 16 the recumbent exceeded the vertical records by 4 to 20 mm.

Similar observations were made by Oddo and Achard, who denominated the fall of blood-pressure following slight exertion in

convalescence "the hypotension of effort." Those observers found that this phenomenon is accompanied by other signs of cardiovascular depression, such as weakness of the first sound, tachycardia, arrhythmia, hypostatic vaso-dilatation of the lower limbs in the erect position, and dermatographia. The practical significance of these observations is to indicate that resumption of muscular work should be gradual in patients presenting the phenomenon of effort hypotension, and should be accompanied, if necessary, by the administration of cardiac and vascular tonics.

*Blood-pressure in laryngeal cases.*—Forty-two cases, or 23·4 per cent., showed various degrees of laryngeal involvement. In 13 *severe* cases tracheotomy was performed; in 11 *moderate* cases the symptoms, though fairly well marked, did not require surgical interference; in 18 *mild* cases the laryngeal symptoms consisted merely of a croupy cough and husky voice, thus representing the first degree of croup of earlier writers.

*Severe cases.*—The effect of laryngeal obstruction on the blood-pressure was most marked in this class. Increase in dyspnoea was followed by a rise of pressure, and the relief of the obstruction on opening the trachea was immediately followed by a considerable fall.

The disproportionately high pressure in relation to the age and the rapid fall on relief of obstruction are illustrated in the following table:

TABLE XIV.

|        |   | Age.    | Blood-pressure<br>immediately before<br>tracheotomy. | Blood-pressure<br>immediately after<br>tracheotomy. |
|--------|---|---------|------------------------------------------------------|-----------------------------------------------------|
| Case 1 | . | 2 years | 120 mm.                                              | 82 mm.                                              |
| " 2    | . | 2 "     | 110 "                                                | 80 "                                                |
| " 3    | . | 3 "     | 110 "                                                | 80 "                                                |
| " 4    | . | 3 "     | 134 "                                                | 94 "                                                |
| " 5    | . | 4 "     | 130 "                                                | 102 "                                               |
| " 6    | . | 4 "     | 140 "                                                | 120 "                                               |
| " 7    | . | 5 "     | 120 "                                                | 108 "                                               |
| " 8    | . | 5 "     | 120 "                                                | 90 "                                                |
| " 9    | . | 5 "     | 140 "                                                | 100 "                                               |
| " 10   | . | 5 "     | 140 "                                                | 120 "                                               |

*Moderate laryngeal cases.*—The rise of blood-pressure in this class was less than in the severe, but the disproportion between the ages and the tension, especially when judged by Seiler's standard, was still obvious, as is shown by the following figures:

TABLE XV.

| Age.      | Blood-pressure<br>on admission. | Subsequent<br>readings. |
|-----------|---------------------------------|-------------------------|
| 11 months | 118                             | 80.                     |
| 2 years   | 110                             | 100, 90.                |
| 3 "       | 120                             | 100, 94, 80.            |
| 4 "       | 130                             | 124, 110, 104, 100.     |
| 5 "       | 124                             | 114, 108, 104, 100.     |
| 5 "       | 140                             | 140, 120, 110, 100.     |

*Mild laryngeal cases.*—The blood-pressure in this class during the acute stage was not any higher than in the purely faucial cases, in fact, it may be said to have been dominated by the character of the concomitant faucial attack.

TABLE XVI.

| Age.    | Blood-pressure<br>on admission. | Subsequent<br>readings. |
|---------|---------------------------------|-------------------------|
| 2 years | 100                             | 90.                     |
| 4 "     | 96                              | 96, 86.                 |
| 5 "     | 110                             | 90,                     |
| 5 "     | 112                             | 110, 106.               |
| 5 "     | 100                             | 90, 110, 100.           |

*Relation of blood-pressure to serum phenomena.*—In the great majority of early serum rashes, erythematous or urticarial, no change occurred in the pressure, while in a large percentage of late eruptions, which are usually associated with febrile disturbance and often with pains in the joints, muscles and fasciæ, the pressure was raised. Thus of 77 cases at the time of the early eruption, 62 patients, or 80·5 per cent., showed no change in the pressure, in 9 it was raised, and in 6 it was lowered. On the other hand, out of 50 with late rashes, in 20 cases, or 40 per cent., the pressure was raised, in 28, or 56 per cent., there was no change, and in only 2 cases, or 4 per cent., it was lowered.

The rarity of any rise in pressure at the time of the early rash is in keeping with the fact that during the second week of disease, in which most of these rashes occur, the pressure is usually at its lowest. In the third week, in the course of which the late serum phenomena occur, the pressure as a rule is no longer falling, while on the other hand the fever and joint pains tend to raise it.

*Blood-pressure in relation to albuminuria.*—As arterial hypotension and albuminuria are both phenomena of diphtheritic intoxication, any change in the blood-pressure co-existent with the occurrence of

albuminuria was almost invariably in a downward direction. Thus among 51 cases in whom albuminuria was not present on admission, its onset was accompanied by a fall in the pressure in 26, and in 25 there was no change; in another 8 cases increase of pre-existent albuminuria was accompanied by a fall in the pressure. The solitary exception to the rule occurred in a girl, aged six years, in whom severe faucial diphtheria was complicated on the twenty-ninth day by uræmic convulsions, one of the rarest events in diphtheria. On the two following days the blood-pressure, which up till then had not been examined, stood at the disproportionately high figure of 120 mm., falling on the thirty-second day to 80 mm. Death took place on the thirty-third day.

Albuminuria in diphtheria thus offers a striking contrast to scarlatinal albuminuria, during which it is usual for the blood-pressure to be raised. Thus in eleven such cases I found a rise in all but two.

*Relation of blood-pressure to diphtheritic paralysis.*—The question as to whether the pressure is affected by the occurrence of diphtheritic paralysis is best answered by discussing separately the early and late palsies in this connection.

The early palsies are those which occur within the first fourteen days, and include only the so-called "cardiac paralysis" and the precocious form of palatal paralysis. The late palsies are those which occur at any time after the end of the second week, and include ocular, pharyngeal and diaphragmatic palsies, as well as the ordinary form of palatal paralysis. The extent to which the blood-pressure is affected on development of these palsies is shown in Table XVII, from which it is seen that any change in the blood-pressure at the time of early paralysis was invariably in a downward direction, while during late paralysis a fall in the pressure was most exceptional.

TABLE XVII.

|               | Rise of<br>blood-pressure.<br>Cases. |   | Fall.<br>Cases. |   | No change.<br>Cases.   |
|---------------|--------------------------------------|---|-----------------|---|------------------------|
| Early palsies | 0                                    | . | 17              | . | 6 (Palatal palsy only) |
| Late palsies  | 18                                   | . | 2               | . | 31                     |

There is nothing surprising in the fact that ocular and palatal palsies were not attended with any fall of pressure, but it is remarkable that pharyngeal paralysis, which necessitated exclusive rectal feeding from ten to eighteen days, was only in two cases

attended with a fall of pressure, in one of which it did not exceed 10 mm. In some cases, indeed, the pressure at this period was raised for several days, thus suggesting an irritative condition of the vaso-motor centre in the medulla, in which the other nerves had undergone a varying degree of paralysis. Kolossova's statement that a fall of pressure preceded the occurrence of palatal and ciliary paralysis has not, to my knowledge, been confirmed by any subsequent observer. Allusion should here be made again to the work of Taddei, who drew special attention to the value of sphygmomanometry in the diagnosis of cardiac lesions in diphtheria. He found that when the blood-pressure was low there was an anatomical lesion of the myocardium, and held that in cases where the pressure was normal the cardiac disturbance might be ascribed to lesions of the cardiac nerve supply. It is principally in the acute stage of the disease that myocardial lesions, of which gallop rhythm is the most characteristic sign, are most likely to occur. It is at this period that the pressure tends to be low, whereas at a later stage during generalised paralysis all the signs of cardiac involvement except gallop rhythm may exist with a normal pressure. Taddei's observations, which are confirmed by my own, help to explain the better outlook of late diphtheritic paralysis, even when generalised, as compared with that occurring within the first fourteen days, when the vaso-motor centre primarily and secondarily the myocardium are affected. The behaviour of the blood-pressure in early paralysis has already been illustrated in Tables IV and V. The following short histories show the course of the pressure in late paralysis:

CASE 1.—Boy, aged 5 years, severe faucial diphtheria. Blood-pressure from second to ninth day 90 mm., from tenth to forty-sixth day 80 mm. Onset of pharyngeal palsy on forty-third day, necessitating rectal feeding till sixtieth day. Blood-pressure during this period as follows:

|                                                                 |      |           |          |           |          |          |      |           |      |      |
|-----------------------------------------------------------------|------|-----------|----------|-----------|----------|----------|------|-----------|------|------|
| Day of disease                                                  | .    | 43rd      | 44th     | 45th      | 46th     | 47th     | 48th | 49th      | 50th |      |
| Blood-pressure                                                  | .    | 80        | 80 morn. | 90        | 90       | 100      | 100  | 100 morn. | 100  |      |
|                                                                 |      |           | 80 even. |           |          |          |      | 100 even. |      |      |
| Day of disease                                                  | 51st | 52nd      | 53rd     | 54th      | 55th     | 56th     | 57th | 58th      | 59th | 60th |
| Blood-pressure                                                  | 100  | 100 morn. | 100      | 100 morn. | 90 morn. | 90 morn. | 90   | 90 morn.  | 90   | 90   |
|                                                                 |      | 100 even. |          | 90 even.  | 90 even. | 90 even. |      | 90 even.  |      |      |
| Subsequent readings until discharge on ninety-eight day, 90 mm. |      |           |          |           |          |          |      |           |      |      |

CASE 2.—Girl, aged  $4\frac{1}{2}$  years, very severe faucial and nasal diphtheria. Blood-pressure from fifth to nineteenth day 80 mm., occasionally sinking to 70 mm., from twentieth to forty-first day 90. Onset of pharyngeal palsy on thirty-eighth day, necessitating

rectal feeding till fifty-fourth day. Blood-pressure during this period :

|                 |           |      |           |                      |           |           |
|-----------------|-----------|------|-----------|----------------------|-----------|-----------|
| Day of disease. | 38th-41st | 42nd | 43rd-44th | 45th                 | 46th-51st | 53rd-54th |
| Blood-pressure  | 90        | 100  | 90        | 80 morn.<br>90 even. | 90        | 80        |

Subsequent readings ranged between 90 and 80 mm.

CASE 3.—Girl, aged 5 years, severe faucial and mild laryngeal diphtheria. Blood-pressure on admission on seventh day 100 mm., from eighth to thirteenth day 90, from fourteenth to twenty-fourth 80 mm., from twenty-fifth to fortieth 90 mm. Pharyngeal palsy on forty-first, necessitating rectal feeding till fiftieth day. The blood-pressure during this period was invariably 90 mm.; on two occasions the measurements were taken morning and evening. From the fifty-first day till her discharge on the seventy-ninth the pressure remained the same, except on two occasions, when it fell to 80 and rose to 100 mm.

CASE 4.—Girl, aged 2½ years, very severe faucial diphtheria. Blood-pressure on admission on fifth day 90 mm., from seventh to ninth day 80 mm., tenth to eleventh 70 mm., twelfth to sixteenth 70-60 mm., palatal palsy on twelfth day, seventeenth day 50 mm., eighteenth to twenty-fourth 70 mm., twenty-fifth to forty-first 80 mm. Onset of pharyngeal palsy on thirty-sixth day, necessitating rectal feeding until death from diaphragmatic paralysis on forty-eighth day. Blood-pressure during this period from thirty-sixth to forty-first day 80 mm., from forty-third to forty-seventh day 70 mm.

CASE 5.—Boy, aged 7 years, very severe faucial diphtheria. Pharyngeal palsy on thirty-eighth day, necessitating rectal feeding till forty-ninth. Blood-pressure for ten days prior to pharyngeal palsy 110 mm. Blood-pressure during the twelve days' rectal feeding as follows:

|                |           |      |      |      |      |           |      |      |      |
|----------------|-----------|------|------|------|------|-----------|------|------|------|
| Day of disease | 39th-40th | 41st | 42nd | 43rd | 44th | 45th-46th | 47th | 48th | 49th |
| Blood-pressure | 110       | 100  | 110  | 106  | 98   | 96        | 100  | 94   | 90   |

Subsequently the pressure rose on the fifty-seventh day to 100 mm., at which it remained until his discharge on the eighty-seventh day.

*Prognostic value of sphygmomanometry in diphtheria.*—Has the estimation of the blood-pressure in diphtheria any value as a guide to prognosis? Does it afford any information which is not given by the ordinary methods of examination as to the progress of the case? These questions can best be answered by consideration of the blood-pressure in the fatal cases. Although in the majority of these the pressure took a progressively downward course, in some cases it might at first keep fairly steady, and then fall suddenly,

remaining comparatively high until the day before death, or it might sometimes show a delusive rise after an initial fall, so that from a consideration of the blood-pressure alone it would be impossible to predict a fatal issue.

In none of these cases, however, did death take place unexpectedly, the characteristic features of malignant diphtheria having indicated the probability of a fatal termination before the blood-pressure had shown evidence of depression.

One may therefore conclude that the estimation of the blood-pressure, though of much theoretical interest and of some value in conjunction with other prognostic signs, is by no means indispensable in forming the prognosis of a case of diphtheria.

*Adrenalin therapy in diphtheria.*—The internal administration of adrenalin in severe diphtheria advocated by me in 1904, and in subsequent communications in 1908 and 1909, has since been adopted with favourable results by other observers. The doctrine of suprarenal insufficiency first introduced by Emile Sergent in 1902 has within the last two years been brought forward again by French clinicians, notably Netter, Hutinel, Moizard and Comby, to account for symptoms which had hitherto been attributed to cardiac failure, bulbar inhibition, or neuritis of the vagus. Netter's pupils, Baudoin and Gautier, have recently recorded in their inaugural theses cases of severe diphtheria, in which the blood-pressure was raised by internal administration of adrenalin.

In the present series 21 members of Class I and 13 of Class II were treated with adrenalin in 10 minim doses of the 1 in 1000 solution every two or four hours according to the severity of the attack. The relatively high pressure shown during the early days of the disease may, in part at least, have been due to the employment of this drug. It is a remarkable fact, however, as Martin and Darré have pointed out, that the ingestion of adrenalin in malignant diphtheria may cause the disappearance of prostration and asthenia without raising the arterial tension.

#### SUMMARY.

(1) In a series of 179 cases of diphtheria the blood-pressure was found to be subnormal in 63 patients, or 35.1 per cent., the extent and duration of the depression having, as a rule, a direct relation to the severity of the faucial attack.

(2) In the great majority the highest readings were found in the first and the lowest in the second week of disease. The normal tension was usually re-established by the seventh week.

(3) In a large proportion of convalescent cases either the readings in the recumbent and erect positions were the same, or the recumbent was higher than the vertical record until convalescence was firmly established.

(4) In laryngeal cases disproportionately high readings were obtained, especially when the dyspnoea was sufficiently severe to require operation. Relief of the obstruction by tracheotomy was followed by an immediate and steep fall of blood-pressure (20 to 40 mm.).

(5) The blood-pressure showed little tendency to be affected by the early serum phenomena, but during the late febrile syndrome it was raised in 40 per cent.

(6) Albuminuria was accompanied either by a fall or by no change in the blood-pressure, except in a case of uræmia, in which there was hypertension.

(7) In early paralysis the blood-pressure tended to fall. In late paralysis, even when extensive, it was usually not affected.

(8) Sphygmomanometry in diphtheria, as in other acute diseases, though of considerable theoretical interest, has little practical significance.

(9) Adrenalin therapy in diphtheria may favourably influence the other symptoms of supra-renal insufficiency without affecting the blood-pressure.

## REFERENCES.

- (1) BAUDOIN, A.—‘Thèses de Paris,’ 1906-7, No. 344.
- (2) BIERNACKI, J.—‘Brit. Med. Journ.,’ 1899, ii, p. 1787.
- (3) BRÜCKNER, M.—‘Deut. med. Woch.,’ 1909, xxxv, p. 1926.
- (4) COMBY, J.—‘Arch. de Méd. des Enf.,’ 1911, xiv, p. 46.
- (5) COOK, H. W. and BRIGGS, J. B.—‘Johns Hopkins Hosp. Rep.,’ 1903, xi, p. 451.
- (6) DENIS.—‘Thèses de Paris,’ 1902-3, No. 215.
- (7) DURAND-VIEL, P.—‘Thèses de Paris,’ 1902-3, No. 156.
- (8) FRIEDEMANN, J. H.—‘Jahrbuch f. Kinderheilk.,’ 1893, xxxvi, p. 40.
- (9) GAUTIER, E. L.—‘Thèses de Paris,’ 1909-10, No. 464.
- (10) HUTINEL, V.—‘Journ. des Practic.,’ 1909, xxiii, p. 146, and in Hutinel’s ‘Mal. des Enf.,’ tom. I, 1909, art. ‘Diphthérie,’ p. 551.
- (11) JANEWAY, T. C.—‘The Clinical Study of Blood-pressure,’ 1904.
- (12) KOLOSOWA.—‘Jahrbuch f. Kinderheilk.,’ 1902, lvi, p. 759.
- (13) MARTIN, L., and DARÉ, H.—‘Bull. et Mém. de la Soc. Méd. des Hôp. de Paris,’ 1909, xxvii, pp. 830 and 1050.
- (14) MOIZARD.—‘Journ. de Méd. et de Chir. prat.,’ 1909, lxxx, p. 881.
- (15) NETTER, A.—‘Bull. et Mém. de la Soc. Méd. des Hôp. de Paris,’ 1909, xxvii, p. 824.
- (16) ODDO.—‘Ibid.,’ 1905, xxii, p. 371; ‘Comptes Rend. de la Soc. de Biol.,’ 1905, lviii, p. 1089.
- (17) ODDO and ACHARD.—‘Ibid.,’ lix, p. 719.

(18) ROLLESTON, J. D.—‘Practitioner,’ 1904, lxxiii, p. 614; *ibid.*, 1909, lxxxii, p. 110; and ‘M.A.B. Reports,’ 1908, “Med. Supplement,” p. 273.

(19) SEILER.—‘Corresp. Blatt f. Schweiz. Aerzte,’ 1910, xl, p. 433.

(20) SERGENT, E.—‘Presse Méd.,’ 1902, x, p. 939, and ‘Bull. et Mém. de la Soc. Méd. des Hôp. de Paris,’ 1909, xxvii, p. 930.

(21) TADDEI, C.—‘Riv. di Clin. Ped.,’ 1904, ii, p. 907.

For further references to the subject of the blood-pressure in acute infections the reader should consult K. Weigert’s admirable monograph, “Über das Verhalten des arteriellen Blutdrucks bei den akuten Infektionskrankheiten,” Volkmann’s ‘Samm. klin. Vort.,’ No. 459 (Serie xvi, Heft 9), Innere Med. No. 138.

## DULL AND BACKWARD CHILDREN.\*

By A. F. TREDGOLD, L.R.C.P.Lond., M.R.C.S.Eng.,

*Consulting Physician to the National Association for the Feeble-minded. Medical Expert to the Royal Commission on the Feeble-Minded, etc.*

### INTRODUCTORY.

CHILDREN differ greatly in their mental capacity, and, leaving out of consideration those who are definitely defective, the elementary school population may be divided into three groups. Firstly, there are those of average intelligence, who compose the majority. Secondly, there are those who are particularly bright. Thirdly, there are those who are so dull that the acquirement of school knowledge is extremely difficult, and in consequence they are backward in their work. With the gradual raising of the standard of modern requirements and with the resulting tightening up of the educational curriculum, these backward children are beginning to attract attention. Not only are they a source of considerable worry to the teacher, and to some extent subversive of school discipline, but the results, from an educational point of view, are often far from satisfactory. Although such children may leave school from Standard VI, their actual acquirements are frequently such as would disgrace a child in Standard III. It is not to be wondered at, therefore, that inspectors, teachers, and managers should be beginning to ask whether we are on the right lines in dealing with this class.

*Number.*—It is first of all desirable to have some idea as to their number.

In Brighton, Dr. Duncan Forbes found that 13·9 per cent. of boys and 11·3 per cent. of girls, or a total of 12·6 per cent. of all the

\* An address delivered before the Surrey Educational Conference, July the 8th, 1911.

children examined, came within this category. In Staffordshire Dr. Reid, the school medical officer for the county, estimates them at about 5 per cent. of the school population. In the county of Surrey, Dr. Jones finds that 6·4 per cent. of boys and 4·5 per cent. of girls, or a total of 5·5 per cent. of the children examined, are dull and backward. In the borough of Guildford, Dr. Pierce finds the total number to be 4 per cent. In Somersetshire I found that the proportion varied from 5 per cent. in some schools to as much as 15 to 20 per cent. in others. It is an interesting fact that in all the districts examined the proportion of backward boys is higher than that of girls.

It is quite clear from these figures that the ratio of dull and backward children is a very varying one, and unfortunately the data available is so fragmentary that no accurate estimation is at present possible. The majority of the reports of school medical officers make no allusion to the subject whatever. The tendency is probably rather to under- than to over-estimate the number, and I think that we shall not be far wrong in saying that about 10 per cent. of the elementary school population of the country come within this category. This would correspond to between 500,000 and 600,000 dull and backward children in England and Wales at the present time.

#### CAUSES : MENTAL DEVELOPMENT.

The essential characteristic common to these children is their inability to progress in school. Such inability, however, may be due to totally different causes, and in order to make this clear I propose to place before you a few facts regarding development. School progress indicates mental evolution, and this is the result of growth and development of the brain. The weight of the brain at birth is roughly 11 oz. During the first year it increases nearly threefold, to 30 oz., and it continues to grow until middle age is reached, when it attains its maximum weight of about 48 oz. The weight increase during school age is naturally less than at the earlier periods, for mental evolution at this time is more a matter of the development of cells, of the elaboration of their processes, and of the increased complexity of their connections than of gross increase in size. Nevertheless considerable increase does take place, especially in boys. Thus, the average weight of the male brain at seven years is 40 oz., whilst at fourteen years it is 46 oz. The weight of the female brain at seven years is practically the

same as the male, but by the age of fourteen, instead of increasing 6 oz., it has only gained  $\frac{1}{2}$  oz. I think we see here the explanation of the greater prevalence of dull and backward boys. In order to reach the average standard a much greater growth is necessary, and this, for various reasons, does not take place.

This growth and development of the brain is the result of two factors—heredity and environment. By virtue of heredity the brain-cells are endowed with an inherent tendency to develop; the surroundings, using this word in its widest sense, may encourage or retard this development. With regard to the former there is not the slightest doubt that the innate developmental capacity of the brain-cells varies greatly in different individuals. In some the potentiality is very great, in others it is comparatively small. This seems to be particularly the case with certain regions of the brain, and in consequence we have striking differences in family aptitudes. There are some families the members of which evince a marked predilection for intellectual pursuits, there are others of which the members are born soldiers or travellers, and there are others with a special bent for mechanical work of some kind or other, and with but little proclivity for book study. These differences are clearly inherited, and the point I wish to insist upon, because I believe far too little importance is attached to it by the educationalist, is that each individual comes into the world with a varying potentiality of development, and with an innate tendency for that development to take place more readily along certain lines than along others.

As we have seen, however, the brain undergoes an enormous growth between birth and the end of the school period, and there is not the slightest doubt that during this time the nature of the environment must exert a very considerable influence. In saying this I do not mean that the environment can supply faculty of which the rudiment is non-existent, or that it can to any great extent modify the course of the inherited tendencies. These things it cannot do, but it can certainly afford or withhold the opportunity for the development of those tendencies. The environment can, in short, encourage or discourage mental evolution.

There are two external factors in particular which have an important influence upon brain development, namely (1) the general state of health of the body and (2) the impressions reaching the brain through the special senses. The brain, like every other organ—indeed, more than any other organ—requires an adequate supply of food, and this it receives through the blood. If, in consequence of improper or insufficient feeding, of defective warmth and impure air,

or of insanitary conditions generally, the health of the body should become impaired, then the nutrition of the brain may be so interfered with as to hinder mental development. The same result may follow in a still more pronounced degree if some definite debilitating disease is present, such, for instance, as tuberculosis, and I have often noticed the mental retardation which occurs after one of the acute illnesses of childhood. But, in addition to food, the stimulation of the brain-cells by sensory impressions is necessary to development, and hence we find that defects of hearing or vision may also play an important part in hindering the evolution of the mind. The same result follows, of course, from the absence of school instruction.

#### VARIETIES OF DULL AND BACKWARD CHILDREN.

It is seen, therefore, that mental evolution is dependent upon heredity and environment, and in agreement with this we find that backward schoolchildren are divisible into two main groups, namely those of (1) innate dulness, and (2) acquired dulness. The problems presented by these respective groups are so different that it is necessary to consider them separately.

GROUP I: *Innate dulness*.—These children are usually sturdy, well grown, and in good physical health, but they have no capacity for book-learning, and the teacher finds the greatest difficulty in teaching them the most elementary abstract rules. Occasionally they may shine in some one particular subject, but this is exceptional, and in most instances there is the greatest distaste and inability for all kinds of school work. They are the children who, in former years, spent most of their time in a corner of the classroom, decorated with a sugar-loaf cap and a slate, on which was inscribed the word "Dunce." In my experience they are commoner in country villages than in towns, and they are often the descendants of generations of agricultural labourers, who have done excellent work with their hands, but very little with their heads. I have seen instances where children, parents, uncles and aunts all belonged to the same type, and there is no doubt that in very many cases the failing is a family one—it is, in fact, inherited.

At the present time we are hearing a great deal about mental deficiency. Everyone—school doctor, inspector, and teacher—is on the look-out for it, and rightly so. The result is that these children often fall victims to the quest. But they are by no means mentally defective. The term "mental defect," in my opinion, should be

restricted to those persons who are so lacking in general mental capacity, in common sense, that they are incapable of subsisting by their own unaided efforts. No doubt book-learning is a valuable asset under present-day conditions, but it is not essential, and there are very many individuals who, although scholastically dunces, have yet sufficient aptitudes of other kinds, and, in particular, sufficient common sense, not only to take care of their interests, but to achieve a considerable degree of success in a humbler walk of life. We must remember that the human mind is compounded of many faculties, and it would be just as logical to say that you or I were mentally defective because we had no taste for music or the fine arts, or were devoid of religious feeling, as it is to so stigmatise these children because their minds do not run to intellectual pursuits.

As a matter of fact you will find that these children have all their wits about them out of school; not only can they hold their own, but they are often the leaders of the playground. One child of this kind whom I recently saw, a girl, aged 12 years, who was in Standard V, told me that David was the son of Goliath, and that he married Rebecca. She could give me no information about India, except that it was a country somewhere. She could write a passable hand, but her spelling was bad, and her arithmetic execrable. And yet she was by no means a fool in other matters. She could clean out a room, could wash and dress the younger children, and could cook the dinner with very little help. I have little doubt that, unless her father apprentices her to a dress-maker or a typewriting agency, she will make an excellent domestic servant.

It is quite evident that our present methods of dealing with dull children of this type leave very much to be desired. We spend years in the attempt to cram them with knowledge which they cannot assimilate, and we neglect to supply them with the training suited to their capacity. During their school course, or during the latter part of it at all events, they make no progress, but simply mark time, and at the age of fourteen years, after much expenditure of the teacher's time, patience and often temper, and of the rate-payers' money, they enter the world with their natural aptitudes for the most part undeveloped.

What is the remedy? Two things are essential for the proper education of this class. Firstly, a modification of the school curriculum to suit their natural aptitudes, and secondly, more individual instruction. With regard to the former there is no

doubt that some improvement has taken place in recent years, but there is still room for improvement, and I would strongly advocate the giving of more time to practical and manual work. The spending of time in modelling, fretwork, carpentry, leather and metal work, sewing, mending, washing, ironing and cooking, to mention a few subjects, would not only do much to develop manual dexterity, and so enhance the prospects of the youth or girl in after life, but it would develop their neatness, patience and industry, and stimulate their general mental evolution in a way which no mere book-learning or abstract teaching could do. We are too apt to lose sight of the fact that the systematic performance of manual tasks exerts an enormous influence upon general brain development, and this is particularly so in the case of the children we are now considering.

The need for more individual instruction is equally great, and it is obvious that no backward child can hope to receive anything like adequate attention in a class consisting of 100 or even 50 pupils; the weakest must inevitably go to the wall.

The solution of the difficulty lies in the establishment of special classes to suit these children. I am of the opinion that every school should be equipped with a class-room under the charge, not of the junior teacher, but of a specially qualified and experienced instructor. Such a class should not be called a "special" one, because this term is now officially associated with the mentally defective. It is better to call it a "practical" or "auxiliary" class. It would naturally form the sorting-place for those mild cases of feeble-mindedness which present difficulty in diagnosis. I may mention that, during the last year or two, Dr. Duncan Forbes, at Brighton, and Dr. Meredith Richards, at Croydon, have each started classes of this kind, and so far with decidedly encouraging results.

GROUP II: *Acquired dulness*.—We now pass on to consider those children whose backwardness is not the result of innate dulness, but of defective cerebral nutrition caused by an adverse environment. For purposes of description I think it is convenient to divide them into three classes.

*Class A* consists of those children who are backward through defective function or lack of opportunity. By this I mean that in consequence of irregular school attendance they are not only behind their compeers in scholastic knowledge, but the avenues of this knowledge, owing to disuse, are not so readily permeable. The condition is not so common in these days of the vigilant attendance officer, and it rapidly disappears under regular tuition. I merely mention it because I have known such children classed as defective.

*Class B* is very similar, except that here the backwardness arises from some partial blocking of the sensory avenues, such as defective vision or hearing, and it disappears upon removal of the cause.

*Class C* is the largest and most important, and consists of those children whose mental development has been hindered by malnutrition or disease. Such children are usually thin, pale and ill-nourished, and present a striking contrast to the sturdy youth who is hereditarily dull. Very often marked anæmia is present, and a certain proportion of them suffer from chronic catarrhs, tubercular glands, or other serious disease. They differ mentally, as well as physically, from the innately dull, because in these children we are now considering the inertia extends beyond the school. They are dull in the playground and the street, and generally lacking in that vitality and spontaneity which is so characteristic of healthy childhood. This condition is commoner in the towns than in the country, and most cases will be found to come from bad homes or the slums. Here, again, there is a very close resemblance to mental defect; indeed, these are the cases of so-called mental defect which become "cured," for the condition is only temporary, and as the bodily health improves so does that of the mind, and the child who has been dull, vacant and inert, astonishes everybody by suddenly waking up.

There is one other variety of dulness, which may be referred to here, which arises in children who have previously been unusually bright and intelligent. It is the result of over-pressure. I do not think that the elementary school curriculum is at all likely to injure normal children. But all children are not normal. Some of the most intelligent have a nervous system which is lacking in durability, and their very brightness only lures to disaster. In addition to ordinary school work, an ambitious father may be providing them with special lessons. The result is a nervous breakdown, a condition of neurasthenia, with mental hebetude and complete inability for work. In most cases, under proper treatment, complete recovery takes place, but not in all, and if disaster is to be averted, the education and daily life of such a child should be prescribed with the greatest care.

It is quite clear that children suffering from acquired dulness require totally different management from those in whom the dulness is inborn. We are here dealing with a disorder of the brain which is secondary to disorder or disease of the body, and until this latter has been remedied, education, even in a "practical"

class, will not only be useless, but may be positively harmful. For education means stimulation of the cortical cells, and they are already stimulated beyond their nutritional capacity. The first essential, therefore, is the treatment of the body by wholesome and adequate food, sleep, pure air, and appropriate medicines. I do not intend to discuss the questions as to by whom and by what means this should be provided ; all that I desire to point out is that, until these things have been provided, attempts at education are not merely useless, but harmful.

In most cases, therefore, the child should be excluded from school until he is in a condition to profit therefrom. In some cases where the condition is slight, and it is not desirable that the child should be altogether deprived of the advantages of discipline and method which result from school attendance, I recommend that he should go in the mornings only. But I must confess that this prescription, although valuable for the child, is not favourably received by the teacher with an eye on his attendance percentages.

#### MEDICAL INSPECTION OF SCHOOL-CHILDREN.

I have now placed before you a short account of the chief types of dull and backward children, together with what I conceive to be the best methods of dealing with them. The point I desire to emphasise is that school-children differ enormously, by reason of their heredity and their surroundings, in their capacity to profit by instruction, and that consequently, instead of vainly attempting to make the child fit the syllabus, we should make the syllabus fit the child. This can only be accomplished by a greater latitude in the application of the curriculum and by much more individual instruction.

If we desire to do the best for each child, the first step is, of course, to endeavour to ascertain the degree of mental capacity and the nature of the hereditary bias. This brings us to the medical inspection of school-children. There cannot be the slightest question that this is a step in the right direction. The recognition of early disease, of conditions of bodily defect, ill-health, and malnutrition—if followed by their proper treatment—will undoubtedly do much to improve the physique of our future citizens. The mere compilation of anthropometrical data, which may be utilised for future reference, may be of incalculable advantage to the nation. But in one respect medical inspection, as at present conducted, is distinctly disappointing. The prime concern of the educationalist

after all is with mind. It is true that we must not neglect the body, and it is gratifying to see that we are now paying more attention to physical instruction; but it is the mind which the teacher is chiefly called upon to develop. This being so, it seems to me matter for great regret that, whilst so much attention is being given to bodily conditions, so little attention is bestowed upon the condition and capacity of the mind. From the point of view of education these conditions of the body derive their chief importance from the effect they have in modifying mental development, and in hardly any of the reports of school medical officers does one find the slightest attempt to correlate these two. As a matter of fact, beyond an often cursory reference to the number of mental defectives, it is the exception to find any reference to the number and condition of the dull and backward children or to the matter of intelligence at all.

I think this is a great defect. Until the school medical officer concerns himself much more with mental conditions than he does at present, and until the physician and the pedagogue work together at this matter hand in hand, we shall never get the best results either from medical inspection or from education.

Increased attention of this kind would probably mean a considerably increased staff, but it would be well repaid by increased national efficiency. For the ideal of a nation, from the point of view of education, must be, not the greatest good of the greatest number, but the greatest development of each individual.

## A COMPLEX TUMOUR OF THE FRONTO-NASAL REGION.

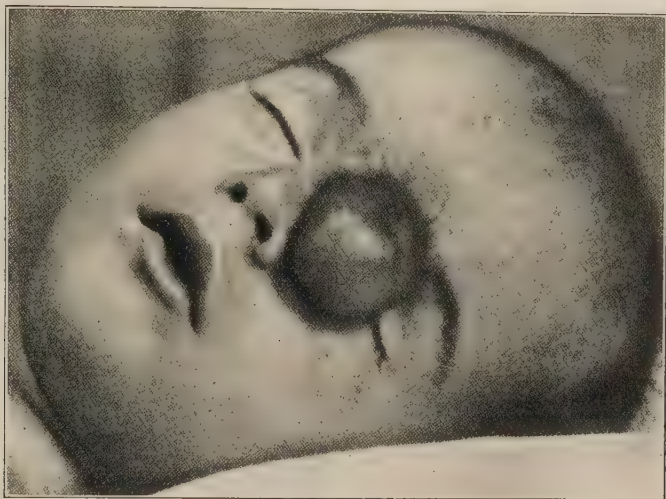
By DAVID M. GREIG, C.M., F.R.C.S.ED.

*Surgeon, Dundee Royal Infirmary; Lecturer on Clinical Surgery and Surgical Diseases of Children, St. Andrew's University, etc.*

THE subject of this unusual neoplasm was a male child, aged 1 year and 5 months. He was the youngest of four children, the eldest, a boy, being alive and well, a healthy though perhaps a somewhat neurotic child. Two years after his birth, the mother, being then six months pregnant, fell downstairs, and to this she ascribes the fact that her second child was dead born at full time. Two years later her third child was born at full time, but only survived two days. The cause of death was jaundice, though whether this was due to any defect in the biliary passages is not apparent from

the mother's description, but it is certainly possible. There is a strong neurotic element on the mother's side, and the mother herself is certainly a very nervous person. It is often in families with such hereditary neuroses that children the subject of congenital defects—mental or physical—are found.

The patient was born at full time, a normal birth, and there was then found to be at the left side of the root of the nose a pendulous globular tumour about the size of a pigeon's egg, showing in some places a curious translucency, and in others a somewhat pink or purple colour as if from subjacent telangiectasis, while the major



part of the skin was normal. About the base of the tumour, which had a diameter of fully half an inch, there was an unusual development of hair. The tumour was not painful when touched. It had a tendency to fall down over the left eye, with the vision of which it interfered. The child was a somewhat delicate and not very well-nourished infant. He appeared apathetic and phlegmatic, as many weakly children do, and the colour of lips and face suggested anæmia. The removal of the tumour was easily carried out, the base being encircled by an oval incision and the skin dissected clear of the pedicle. The attachment itself was unusually vascular, though the bleeding was easily controlled by pressure, and there was no connection between the tumour and the pericranium or the bone.

The wound healed by first intention, and the child made an

excellent recovery, and under careful dieting improved much in brightness and in his general health.

It was anticipated that the tumour would prove on examination to be a teratoma, but this surmise was incorrect, as there was not enough variety of structure in the tumour to warrant such a diagnosis. The nævoid element, which was recognised clinically, was a feature of the growth. Altered voluntary muscle was also found, and at one or two points glandular tissue. The main mass, however, of the tumour was fibrous, and though nerve-elements were specially looked for, they were looked for in vain. The pathological examination was carried out by Professor L. R. Sutherland, and the diagnosis thereafter was "a complex congenital tumour with a nævoid tendency."

The frequency with which angiomata affect the head and face is well known, and it is in accordance with expectation that circumscribed nævi have been reported occupying much the same position as in the above case. Though the colour of parts of the tumour and an amount of telangiectasis of the cutaneous capillaries indicated clinically some nævoid tissue, it could not be reduced in size by pressure, which with the hardness showed that it was not a simple nævus. It is seldom, however, that facial nævi attain such a size, though Kirmisson (1) figures one which is by no means less, but it had not the distinct pedunculation of my tumour, sprang from the region of the cheek, and its vascularity was much more pronounced.

That the condition is a rare one is obvious from the absence of reference to such in literature. The case of a child with a tumour presenting very similar clinical characteristics, but distinctly different in microscopic constituents, is figured and briefly related by Ballantyne (2). The tumour was somewhat larger than in my case, occupied a similar site, but contained bone, fibrous tissue, mucoid tissue, and hyaline cartilage. Ballantyne suggests teratomatous origin, but Mr. Rutherford Morison, who successfully removed the tumour, considered it an example of accessory upper jaw. My case, on account of the fewness of the elements of which the tumour was composed, cannot be considered as applicable to either of the above, but merely a mixed congenital tumour with a predominating nævoid element.

#### REFERENCES.

- (1) KIRMISSON, E.—'Traité des Maladies Chirurgicales d'origine congénitale,' p. 714. Paris, 1898.
- (2) BALLANTYNE, J. W.—'Manual of Ante-natal Pathology and Hygiene,' "The Embryo," p. 447. Edinburgh, 1904.

## Seventh Congress of the Italian Paediatric Society.

HELD AT PALERMO, APRIL, 1911. *La Pediatria*, 1911, XIX, p. 299, and *Riv. di Clin. Pediat.*, 1911, IX, p. 401.

**Sclerema and Sclero-œdema.**—Professor C. COMBA reviewed the literature. He admitted no distinction between sclerema and sclero-œdema. The symptomatology consisted in an induration of the skin, more especially localised in the lower limbs and in a lowering of temperature. At autopsies the skin was hard and dry, and pressure on the subcutaneous tissue did not produce any escape of fluid. The adipose tissue was dense, like stearine. Sclero-œdema was sclerema with œdema added, which infiltrated the skin and the indurated subcutaneous tissue and extended to parts not affected by sclerema, *viz.* the scrotum and penis. Monti found the fat of the skin normal histologically, except for traces of a gelatinous substance and micro-organisms similar to Friedländer's bacillus. As to the cases described by Ballantyne, Stillmann, and Savornat, in which there was a marked hyperplasia of the subcutaneous connective tissue, the author thought they belonged to rare congenital forms of diffuse sclerodermia. Perrando, however, almost invariably found congenital malformations and arrested development of the thyroid and thymus. As to the pathology, Parrot's theory that the disease was due to athrepsy was unsatisfactory. Knöpfelmacher investigated the composition of the fat and found diminution of oleic acid and excess of palmitic and stearic acids. The lowering of temperature and greater consumption of the reserve of fat might help in rendering the subcutaneous adipose tissue harder, since the organism would utilise its more fluid fat. Siegert, on the contrary, found the fat rich in oleic acid. As an example of the lowered temperature the author suggested the unstable condition of the thermic centres in infants. He alluded to the work of Perrando and his school, but thought that many of their cases were instances of congenital myxœdema. He concluded that sclerema is not a pathological entity, but rather a clinical syndrome due to disturbance of the function of thermogenesis and thermotaxis in the new-born and suckling.

E. MENSI (Turin) had observed eighty-two cases of sclerema which exhibited two different clinical forms according as the skin was thickened or thinned. The first form was met with in premature infants and those born at term, mostly at the cold season of the year, and was often preceded by œdema; it was localised principally in the calves, thighs, buttocks, shoulders, and cheeks; it very rarely affected the hands and feet. If the infant lived long enough it might extend to the whole of the body. The temperature was usually lowered but might become febrile; broncho-pneumonia and albuminuria were often present and a fatal issue common. Post mortem, besides renal and pulmonary lesions and congestion of the viscera there was atrophy of the skin accompanied by deficiency of the granular layer, thickening of the cells and fibrous tissue of the derma, with vascular dilatation. In the second form there was stiffening and thinning of the cutis; it was seen in premature infants, and during hot seasons, and might also be preceded by cutaneous œdema (34 per cent.); it had the same localisation, but for the most part was associated with changes in the digestive system,

diarrhoea, not infrequently broncho-pneumonia, and almost always renal lesions. The temperature was generally higher than in the first form, and the result was usually fatal. There was atrophy of the epidermis with deficiency of the granular layer, thickening of the fibrous tissue, scarcity of vessels and cells in the derma, abnormal development of connective-tissue bundles round the markedly diminished adipose tissue, which was infiltrated with cells. The first form corresponded to the sclero-œdema or sclerema of Parrot. The author did not accept this distinction of terms. In various researches he had endeavoured to ascertain if, in these conditions, there were any causes at work sufficient to disturb the relation which normally existed between the chlorine content and the water content of the organism, and if in sclerema the balance of chlorine underwent any modifications analogous to those observed in ordinary œdema. He found that for the production of sclerema neither the nephritic element was necessary, nor the retention of chlorine in its natural clinical manifestation—subcutaneous œdema. Equally doubtful were the other two factors invoked by authors as determining the cutaneous hardening, viz. the hypothermia and special composition of the fat. Neither was the infective theory of Comba sufficient to explain the development of the sclerema. From his own observations the author inclined to the opinion which recognised that sclerema essentially consisted in a change in the connective tissue of the derma resulting in thickening, hypertrophy, or sclerosis, according to the form, with intermediate stages—a kind of essential sclerosis of the subcutaneous tissue. He thought that a congenital factor was necessary, either as a predisposing local element or as a general constitutional element. From the resemblance between sclerema and myxœdema he was led to seek in the former some change in the thyroid, thymus, or supra-renals. In twenty-four cases he found the weight of the thyroid was above normal in sixteen, below in four, and equal in four; otherwise his researches were inconclusive.

L. RIVA-ROCCI's experience led him to agree rather with the conclusions of Comba than with those of Mensi. He could not admit the latter's views with regard to the hypertrophy of the connective tissue, since it was clinically proved that sclerema could supervene rapidly and as rapidly disappear. He believed that this formation of connective tissue was only apparent, and that the hardening of the skin was due to change in consistency from solidification of fat. With regard to the cause of the peripheral coldness, he thought it unnecessary to invoke the vulnerability of the thermic centres, but it might depend on the lessened sanguineous irrigation of the cutis, which might arise in the course of infections and intoxications. He thought that sclerema should be considered a syndrome produced by different causes, but which resulted in a change in the peripheral circulation with alteration in the state of the fat and cutaneous albuminoids.

SIMONINI had never been able to trace any connection between sclerema and diseases in the parents. During ten years he had had nineteen cases in cold seasons, fifteen in temperate, and seven in warm. He had found lesions in the supra-renal capsules, and thought the pathology of sclerema would be found in glands with internal secretion.

SPOLVERINI related some facts observed by him in kids born from thyroidectomised goats. They were of less weight than the controls, presented general atony and hypothermia, but he could not satisfy himself that true sclerema existed.

CONCETTI thought the importance of glands with an internal secretion in

the pathology of sclerema could not be denied. He instanced the relations between hypo-function of the thyroid and deficiency of the thermo-regulatory centres, the proneness to infection and the various cutaneous disorders to which sclerœdema was allied. He did not attribute the latter to the thyroid, however, but mentioned this because it was better known. There were many other glands whose function was obscure or unknown.

COMBA did not agree with Mensi's view that sclerema consisted in a change in the connective tissue; such changes would produce scleroderma. He thought that cases due to the thyroid should be classed as congenital myxœdema. The connection between sclerema and glands with internal secretion was not proved; he considered sclerema a morbid syndrome characterised by hypothermia and induration of the subcutaneous tissue; such hypothermia might be caused by incomplete function of the thermo-toxic centres easily affected by toxic and infective causes.

#### **The Ratio of Growth in Breast-fed and Bottle-fed Infants.—**

C. CATTANEO.—In six children, three of them breast fed, the weight was taken, the quantity of milk measured, and its quality analysed, every week. The ratio of growth per kilo and per diem was a variable quantity, which graphically was expressed in an interrupted curve, while the curve of total growth was continuous and regular.

**Elimination of Uric Acid by the Milk.**—A. FILIA, as the result of his researches on goats, stated that (1) uric acid and purin bases in small quantity passed through the milk; the administration of food rich in nuclein, injections of lecithin, uric acid given by mouth and by injection, slightly increased the elimination of uric acid and purin bases. (2) There was no difference in the quantity of uric acid and purin bases eliminated by the milk in uræmic or healthy women.

#### **The Micro-organism of Bordet and Gengou in Whooping-cough.**

FINZIO.—In eight nurslings with initial forms of bronchitis, or bronchopneumonia, examination of the sputum gave negative results. On the other hand, in ten infants with pertussis, this organism was isolated eight times in the first weeks. In ten cases the serum of these agglutinated the bacillus five times. Fixation of the complement was obtained six times out of eight.

**The Pathology of Icterus Neonatorum.**—D. PACCHIONI, from personal researches, concluded that the fundamental cause was the loss of water sustained by the infantile organism in the first days after birth. This loss of water produced a condensation of all the fluids of the body, including the blood (hyperglobulia). If the loss of water was not too great, the infant, although having a certain amount of hyperglobulia, had no jaundice; on the other hand, a more accentuated hyperglobulia caused the formation of bile so thick and viscid that it could not flow freely along the bile-ducts, and was absorbed by the blood and lymphatics.

MENSI said that the theory of condensation of the mass of the blood was not admissible in those cases where jaundice appeared during the first few hours of life, because sufficient loss of water was then excluded. He adhered to the idea of the hepatogenous nature of the complaint.

MODIGLIANI had seen hyperglobulia become less after the ingestion of liquid food.

PACCHIONI, in reply, said that prolonged parturition might contribute

towards condensation of the blood. In the plethoric, jaundice might be wanting owing to early introduction of liquids.

**Spasmophilia in Infancy.**—N. FEDE described the various forms of spasmophilia, which he attributed to the action of toxic substances attaching themselves to the cellular elements of the nervous system, especially the cerebral, in children already predisposed by neuropathic heredity. The toxic element was for the most part derived from the digestive tube, but might also be of other origin, *e. g.* infective.

LONGO described a case seen at the Clinic in Rome. A child with tetany had, during its stay there, three acute infections—varicella, measles, and broncho-pneumonia; none of these caused any variation in the course of the tetany. No good results followed the use of paragangline. At an earlier stage the administration of milk produced an aggravation of the symptoms, but latterly this was no longer observed. This seemed to show an anaphylaxis as regards milk.

BERGHING had on several occasions seen attacks of spasmophilia reappear after administration of milk, and disappear on giving farinaceous food.

PETRONE had had good results from parathyroidine. He found that this substance increased galvanic excitability.

**A Case of Ritter's Disease (Dermatitis exfoliativa).**—SORGENTE isolated from the blood and skin a micro-organism which was agglutinated by the blood-serum of the patient.

CONCETTI thought that two forms of this disease existed; one, inflammatory from irritative causes, and which might be considered a severe, extensive erythema, with formation of vesicles, and followed by desquamation; the other that described by Ritter, where inflammatory lesions were not found, but rather a cutaneous maldevelopment. In some cases thyroid did good.

**Septicæmia in Children.**—BAGINSKY (Berlin) reported four cases of severe septicæmia in whom the place of entry was hardly discernible. It mostly took the form of a polyarthritis, which simulated rheumatism, but did not suppurate. In one case the process started from a septic appendicitis simulating arthritis. In one case of typhoid, a streptococcic septicæmia simulated at the autopsy a miliary tuberculosis, which was afterwards found to consist of streptococcic infarcts.

**On the Persistence of Scarlatinal Infection.**—BAGINSKY had collected thirty-six cases of children who after six to eight weeks' treatment in hospital returned home and gave the disease to other members of the family. They had no residual lesions, *e. g.* pharyngitis or otitis.

**On the Pathology of Rickets.**—VAGLIO and JOVANE referred to their previous researches on the importance of intestinal toxins in producing rickets. The toxins were not, however, always sufficient to produce it on account of the antitoxic defence of the child, and when that was wanting rickets became manifest. A condition of hypothyroidism favoured such a condition.

**Bacterio-hygienotherapy in Intestinal Disorders.**—SPOLVERINI, after alluding to the recent researches of Tissier and Metchnikoff, related sixty cases treated by him with various soured milks and by selected cultures of

various acidophile bacteria (lactobacilline, lactopressamine, caseobacilline, fresh cultures, etc.), making observations on the fæces and urine. The results were always rapid and favourable; the best were obtained with natural soured milks and then with dried bacilli, with which the action was slower and less marked.

**Wassermann's Reaction in Children.**—FRANCIONI and MENABUONI, after practising this reaction in many cases, found it positive in the first few days after birth before objective symptoms were present. It was invariably positive in hereditary lues and continued so for many years, being little affected by treatment. It had, however, a limited value as proof of indirect hereditary influence on the offspring. The authors cautioned against regarding a positive result as an absolute indication for active treatment, since the reaction remained positive after repeated and energetic treatment.

SPOLVERINI asked if the authors had practised the cuti-reaction to tubercle when they had found Wassermann's reaction positive in children under one year without symptoms of syphilis. It had been asserted that in syphilitic adults the cuti-reaction was more marked than in those suffering from tuberculosis.

CACIOPPO had found Wassermann's reaction positive in children with clinical symptoms, but not constant during the period between birth and the appearance of these symptoms—a period of the greatest importance as regards early diagnosis and prophylaxis.

FRANCIONI, in reply, said he had made no special observations as to the relation between Wassermann's test and the cuti-reaction.

**On the Sensation of Fluctuation in Large Appendicular Abscesses in Children.**—RIVA-ROCCI.—In deep abscesses of appendicular origin the usual objective symptoms were wanting; there was only a sensation of fluctuation as in early ascites and this aided the diagnosis.

**Intra-venous Serum Therapy in Diphtheria.**—MODIGLIANI, in support of the efficacy of this method, gave statistics of his cases, some of which were veritable resurrections.

BERGHING had not obtained any better results from the intra-venous than from the subcutaneous method; the size of the dose was the only essential.

GAGNONI had obtained good results, but had always used both methods in conjunction.

**The Biological Reaction of Extract of Bovine Tuberculous Glands.**—VALAGUSSA, to investigate the relationship between glandular tubercle and pulmonary phthisis, practised the auricular reaction with bovine tuberculous glands on sixty-seven children. The experiment was made simultaneously with the cuti-reaction with tuberculin of bovine and human origin. In all the sixty-seven cases he was able to note the parallelism between the two reactions. In one case only, in which the cuti-reaction had been negative, the auricular was positive, and the autopsy disclosed tubercle of the peribronchial glands.

**Sudden Death in Children.**—COZZOLINO.—The more accurate investigations of recent years on so-called thymic causes of sudden death led to the presumption that the majority were not really such. Functional and physical signs of thymic disturbance existed, but were not pathognomonic—

the diagnosis was usually one of exclusion. The majority of cases of sudden death were attributed to the mechanical influence of the thymus, either hypertrophied or rapidly engorged, although pathological data were wanting. The theory of the status chloro-lymphaticus of Escherich was unsatisfactory, whereas the mechanical theory had received brilliant confirmation from the success of thymic surgery. Partial subcapsular thymectomy might save many children from the risk of sudden death.

LANZA. Most cases of this kind were explicable either clinically or pathologically, and the progress of science would eventually clear up those whose pathology was obscure.

MAGRASSI related two cases. The first child suddenly died two days after the operation of cystotomy. There was an ascaris found in the rima glottidis. The second child died suddenly twenty-two hours after operation for macroglossia; several ascarides were found in the nasal cavity.

VINCENT DICKINSON.

## Abstracts from Current Literature.

### Medicine.

**Tuberculosis in childhood** (*Brit. Med. Journ.*, 1910, II, p. 76).—F. Hamburger, in a paper read at the Tuberculosis Conference in Edinburgh on the incidence of tuberculosis in children in Vienna, summarises the result of his investigations as follows: (1) The majority of persons become infected by tuberculosis in childhood. (2) The frequency of tuberculous infections increases from year to year, whilst the frequency of manifest tuberculous disease decreases from year to year. (3) Tuberculosis is very commonly latent, producing no symptoms, especially if infection dates from the third or fourth year. (4) The prognosis of tuberculosis in childhood becomes more favourable the older the person is at the time of the first infection. In the subsequent debate the comparative frequency of abdominal tuberculosis among children in Edinburgh and Glasgow was brought out. Cases in which town children had derived tuberculosis while in the country from drinking tainted milk warm from the cow showed that the disease was more dependent on bad milk supply than on bad air.

J. E. BULLOCK.

**Head's areas in commencing tuberculosis in childhood** (*Jahrb. f. Kinderheilk.*, 1911, LXXIV, p. 71).—C. T. Noeggerath and V. Salle find in pulmonary tuberculosis that hyperalgesia exists in the chest and back in the areas supplied by the second, third and fourth dorsal nerves. Very frequently the hyperalgesia extended to the fourth cervical area, rarely to the fifth dorsal, and only once to the sixth dorsal area; both sides were equally affected, save in one case where painful sensation was more marked on the left side over a broader zone. The authors examined 46 children, in 24 of whom commencing phthisis was suspected; 16 of these showed Head's areas; in 20 out of the remaining 22 no clinical examination revealed signs of any disease, and in these there was no hyperalgesia.

F. R. B. ATKINSON.

**The pre-tuberculosis stage** (*L'Echo Méd. du Nord.*, 1911, xv, p. 221).—**Deléarde**, in a lecture to a congress, speaks of the importance of sending children into the country during the holidays who are in the pre-tubercular stage, undersized, pale, unhealthy-looking, often with enlarged glands. This is especially important when other members of the family are tuberculous and when they live in unhygienic surroundings. It is more important from the point of view of the State to care for such children than to treat children suffering from marked tuberculosis, as they are likely to make more efficient citizens. Mountain or sea air, with plenty of free space and sun, will restore to them physical vigour and arrest the progress of the disease.

J. PORTER PARKINSON.

**Splenic anæmia and occult tuberculosis** (*Gaz. Hebd. des Sci. Méd. de Bordeaux*, 1911, xxxii, p. 303).—**J. Sabrazès** and **E. Dubourg** relate the case of a girl, aged 12 years, who from birth had been called the "wax doll" owing to her pallor. She had frequent bleedings from the nose, but was generally healthy. At the age of 5 years the spleen was noticed to be enlarged, and she was treated with arsenic and phosphorus. Aged 6 years, she had some enlargement of the cervical glands, and a year later scarlet fever, after which the nose bleedings were more severe. There were also repeated attacks of diarrhoea with foetid stools. When 8 years old she had joint pains without swelling, and examination of the blood showed poikilocytosis. Wassermann's reaction was negative. At 12 years she was very anæmic, there were a few enlarged glands in the neck, and the spleen was much enlarged, reaching well below the umbilical level. The liver was not enlarged. The stools were normal. The skin reaction was positive to the tuberculin test. The heart and arteries were normal. Blood examination showed 2,261,000 red cells, 6820 leucocytes, polynuclears 38·2 per cent., lymphocytes 48·87 per cent., large mononuclears 8·98 per cent., eosinophiles 0·56 per cent.; microcytes and macrocytes were present. The child is still suffering from repeated epistaxes, and it is suggested to perform splenectomy later.

J. PORTER PARKINSON.

**A case of congenital heart block** (*Austral. Med. Gaz.*, 1911, xxx, p. 324).—**J. M. Gill** narrates a case of this condition in a girl, aged 14 years. Death took place suddenly. No venous pulse-tracing could be obtained, but a 1 to 1 radial respiratory rhythm.

F. R. B. ATKINSON.

**A case of transposition of the heart** (*Med. Record*, 1911, i, p. 962).—**Nathaniel P. Brooks** narrates a case in a girl of twelve years of age in whom the apex-beat was visible in the fifth interspace 2·5 inches to the right of the midsternal line, 5 inches below the ensiform cartilage in the mammary line. On auscultation the first sound was heard with maximum intensity at the same spot. The second sound was most pronounced in the third interspace at the right border of the sternum, and a distinct second sound was also to be heard at the left border of the sternum.

F. R. B. ATKINSON.

**Occurrence of functional murmurs in children** (*Austral. Med. Journ.*, 1911, xvi, p. 173).—**R. M. Downes** found that 32½ per cent. of the children at the Melbourne Children's Hospital presented hæmic murmurs. They were audible in the pulmonary area in 34 cases, at the apex in 23, and in both areas in 21, in the pulmonary and aortic areas in 6,

and in 19 in all three areas at once. In 89 per cent. of cases of children under four years of age, the pulmonary second sound was louder than the aortic second sound.

F. R. B. ATKINSON.

**Extra-systole in childhood** (*'La Pediat.,'* 1911, xix, p. 369).—F. Visco found extra-systole forty-eight times among 1000 children. Its presence indicated a cardiac disturbance due to unusual stimuli. This proves that the opinion advanced by some who admit extra-systole in adults but deny it in children is erroneous. It is met with in very diverse conditions, and in children is hardly ever the expression of cardiac affections or diminution in the force of the heart, but a simple functional disturbance without bad prognosis and without intrinsic value. The most usual causes are intoxications, and a state of irritable weakness of the nervous system. Rest, quiet and sleep ensure its disappearance, and therefore in the majority of cases exclude an organic lesion, which, on the other hand, is the most frequent cause of persistent arrhythmia in adults.

VINCENT DICKINSON.

**The common behaviour of the heart in influenza and pneumonia in childhood** (*'Med. Review of Rev.,'* 1911, xvii, p. 296).—Le Grand Kerr summarises this subject as follows: (1) Owing to the anatomical and physiological peculiarities of the child's circulatory apparatus the clinical manifestations are markedly influenced, and the danger to the heart in children is not the same as in adult life. (2) Cardiac involvement occurs very early in influenza and is probably myocardial, and the time to begin treatment of the heart is as soon as the diagnosis of influenza has been made. (3) In lobar pneumonia the heart rarely requires active treatment at any time during the onset of the disease. (4) In broncho-pneumonia the prolonged strain upon the heart demands active treatment, early and prolonged. (5) Coughing may be as important an element as increased blood-pressure in the production of cardiac hypertrophy.

F. R. B. ATKINSON.

**The heart in malignant visceral rheumatism in children** (*'Paris Méd.,'* 1911, ii, p. 117).—E. Weill and G. Mouriquand draw particular attention to the seriousness of heart lesions after a mild attack of articular rheumatism. The cardiac lesion shows itself by pain and tachycardia and stethoscopic and other signs. The pain may be slight and confined to the præcordia and increased on pressure, or intense and radiating extra-cardially. The tachycardia is always regular. The stethoscope frequently reveals mitral insufficiency. The authors lay particular stress on Jossierand's sign, namely, accentuation of the pulmonary second sound. It often precedes the other cardiac signs and is of serious import. The liver is often enlarged; signs of congestion of the lungs are frequent. The face is generally very pale. There is slight fever at the commencement of the malady, and this disappears as the condition improves, only to reappear at the terminal stage. This symptom is of great importance. Meynet's nodules on the periosteum, tendons and subcutaneous tissues are frequent. The prognosis is very unfavourable, and ten cases seen by the writers all died. The disease generally consists of three stages: first stage marked by pains in the cardiac region, an intermediate stage of deceptive improvement, and a third characterised by hyperthermia, hæmoptysis, and asystole ending in death. Examination of the heart microscopically reveals parenchymatous

myocarditis, associated or not with pericardial and endocardial lesions. The treatment consists in careful attention to all cases of rheumatism however slight and medication by salicylates. The writers recommend salicylate of soda dissolved in twice its volume of water, and two to four grammes injected subcutaneously. The authors believe that the thyroid gland plays some part in the disease, and recommend iodothyrene in addition to salicylate of soda. Digitalin in 1 in 1000 solution is recommended for alleviation of the pains and tachycardia.

F. R. B. ATKINSON.

**Puncture of the pericardium through the epigastrium** (*Bull. et Mém. de la Soc. Méd. des Hôp. de Paris*, 1911, xxxii, p. 133).—**Marfan** finds that this is a better way of puncturing the pericardium than that through the intercostal spaces. The trocar is inserted below the xiphoid cartilage in the middle line and directed obliquely from below upwards, and the handle gradually lowered towards the abdominal wall, so that the point of the needle approaches the posterior wall of the sternum. The needle must be inserted exactly in the middle line; contact with the posterior surface of the sternum is to be avoided, otherwise the needle will penetrate the cellular tissue separating the pericardial sac from the triangularis sterni. The author practised this method twelve times on a child aged  $6\frac{1}{2}$  years, and found it quite easy and free from danger. He hesitated to perform pericardotomy, as, owing to the condition of the patient, he did not think a general anæsthetic advisable, and also because the statistics relating to pericardotomy are far from being favourable.

F. R. B. ATKINSON.

**Blood-pressure in normal children** (*Monats. f. Kinderheilk.*, 1910, ix, p. 257).—**W. Kaupe** examined the systolic and diastolic blood-pressure with Riva-Rocci's instrument in 144 normal children, aged from three to thirteen years; 123 were girls and 21 boys. Children below the age of three years would not keep sufficiently quiet to be examined accurately. The readings ranged from 80 to 100 mm.; in only a few cases were higher records made, chiefly in nervous and excitable children. No essential difference was found between the readings made in boys and girls. Strong children had often, but not invariably, a high blood-pressure; weakly children did not always show a low reading. There was a fairly constant difference of 8 to 9 mm. between the systolic and diastolic pressure.

J. D. ROLLESTON.

**Blood-pressure in childhood** (*Arch. f. Kinderheilk.*, 1910, liii, p. 332).—**P. Wolfensohn-Kriss** examined the maximum and minimum blood-pressure of 350 normal children aged from two to seventeen years by Riva-Rocci's and Basch's methods. She found that the blood-pressure rose with increase in the age, height, and weight respectively. In children of the same age, but of different weights, the blood-pressure was different. It was also different in children of the same age, but of different weights. Sex made no essential difference. Sixty-five sick children were also examined, but no definite conclusions were drawn.

J. D. ROLLESTON.

**Blood-pressure in children** (*Jahrb. f. Kinderheilk.*, 1911, lxxiii, p. 273).—**V. Salle**, using Recklinghausen's modification of Riva-Rocci's instrument on children aged from three to eleven years, found that the maximum and minimum pressure rose with the age, and within certain limits were dependent on the weight and size of the child. Deviations from

the normal were found in lymphatism, in which the pressure was lowered, and in neuropathy and nephritis, in which it was raised.

J. D. ROLLESTON.

**Blood-pressure in infancy** ('*Rio de Janeiro*,' 1911).—**M. Leitão**.—This monograph is based on the examination of 200 healthy children aged from one month to five years; 140 (70 per cent.) were in the first year of life. The systolic and diastolic pressures were taken morning and evening with Erlanger and Hooker's sphygmomanometer. Leitão's conclusions are as follows: Blood-pressure in children is normally low. It varies from -68 mm. Hg. in the second month of life, and rises progressively until the seventh month, ranging between 78 and 100 mm. in breast-fed children. From the seventh to the eighth month the readings were from 78-84 mm., but no breast-fed children at this age were available. From the eighth month to five years the blood-pressure remained almost stationary, but on the whole showed an upward tendency, occasionally rising about 100 mm. The pulse-pressure increased progressively, being relatively higher than in the adult, in the second month it was 18 mm. Hg., in the seventh month 28 mm., and from the eighth month until five years it varied from 20-34 mm. Sex and race had no influence on the blood-pressure in childhood. Artificial or mixed alimentation had a decidedly hypotensive action.

J. D. ROLLESTON.

**The blood-pressure in the acute nephritis of children** ('*Arch. of Pediat.*,' 1911, xxviii, p. 343).—**L. Gordon** records the systolic blood-pressure estimated by Martin's modification of Riva-Rocci's sphygmomanometer in seven cases of acute and two of chronic nephritis in children aged from two to eleven years. In three of the acute cases the hypertension was very great, viz. 180 mm., 162 mm. and 160 mm., as compared with the normal 88 mm., 81 mm. and 104 mm. respectively. The highest blood-pressure was found in those in whom only a trace of œdema was noticeable. In these patients the quantity of blood in the urine was very great.

J. D. ROLLESTON.

**The effect of cold air on blood-pressure in respiratory affections** ('*Med. Record*,' 1911, i, p. 180).—**B. Raymond Hoobler** found that in children with respiratory affections when placed out of doors that the blood-pressure rose 5-10 mm. Hg., e.g. a child with lobar pneumonia had a blood-pressure which varied one day from 95-110 when indoors; next day when out of doors it varied from 95-120. A case of pleurisy with effusion had an indoors pressure of 110 and an outdoors pressure of 130; on return to the ward it fell to 110. A child with incipient tuberculosis had an indoors pressure of 95 and an outdoors one of 105.

J. D. ROLLESTON.

**Rigidity of the arteries in childhood** ('*Münch. med. Wochens.*,' Jan. 31, 1911. *Abstr. Journ. A.M.A.*).—**Hamburger** has frequently noticed unusual size and hardness of the arteries in children between the age of eight and fourteen; the findings are sometimes so pronounced that they suggest arterio-sclerosis or kidney disease, but he ascribes the phenomenon to nervous vaso-motor influences. Certain signs of neurasthenia and nervous irritability can usually be detected in these children, and this exaggerated tonus of the artery is encountered during the years when school life makes special demands on the nervous system. Disturbances of this kind are more common in ambitious, studious children.

T. R. WHIPHAM.

**Contribution to the study of Oppenheim's disease** (*Riv. di Clin. Pediat.*, 1911, ix, p. 1).—**L. Concetti** describes seven cases under his own care, the clinical picture of all seven corresponding to that of Oppenheim. A noteworthy fact was the state of changed somatic and psychic development which is usually associated with hypothyroidism, and in a wider sense with deficient function of the glands with internal secretion generally. In almost all there was excess of fat, cedema was noted in four, in one there were large supraclavicular cushions, desquamation of the skin in four, intellect backward in two, absolutely deficient in two others, in two there was deficient body development, in one the genitals were rudimentary, in another a Mongolian face, five died of broncho-pneumonia, and two were lost sight of. Although in one case there was a definite improvement without thyroid treatment, in three others in which this was tried the improvement was much more early and marked, without any electrical treatment; the symptoms of hypothyroidism also disappeared more rapidly and almost entirely.

VINCENT DICKINSON.

**Case of congenital muscular atony (Oppenheim)** (*La Clin. Infant.*, 1911, ix, p. 72).—**Ch. Chatelin** states that hitherto only seven cases have been published in France, and publishes in full this case which was shown at the Société de Neurologie. The boy, aged 4 years, had symmetrical and general muscular atony, most marked in the lower limbs and trunk—the face and ocular muscles were not affected. There was a laxity of ligaments which allowed abnormal positions of hyper-extension, faradic excitability abolished, galvanic normal.

VINCENT DICKINSON.

**Friedreich's ataxia** (*Med. Record*, 1910, i, p. 858).—**E. H. Hunt** showed two cases of this nature in sisters, one aged 11 years, the other aged 3 years. They were typical, and there was no evidence of syphilis (Wassermann's reaction negative, etc.).

ERNEST JONES.

**Friedreich's ataxia in a child, aged 5½ years** (*American Medicine*, 1910, xvi, p. 477).—**M. Neustaedter** reports an interesting and difficult case which he regards as one of Friedreich's ataxia. No similar condition had previously occurred in the patient's family. A boy was quite normal until the age of three years, when he began to suffer from vomiting. This was at first occasional, but by the end of six months took place several times daily, in spite of treatment. During these months he complained of headache and began to show unsteadiness in walking. After a short febrile illness of three days' duration the vomiting and headache disappeared, but he was left unable to rise or walk without assistance. Six months later ataxia of the upper extremities developed. At the age of 5½ years there is considerable muscular hypotonus present and the patellar reflexes are absent. An illustration shows well-marked genu recurvatum but no clubbing of the feet. There is no nystagmus. Intelligence, hearing, the fundi of the eyes and the sphincters are unaffected. The deep muscular sense has gone, but there are no other sensory changes. The gait is that of a "typical tabes," and the speech is rather slow. Argyll-Robertson pupils are present, and the serum reaction for syphilis is positive. No reference is made to the condition of the plantar responses or to the presence or absence of scoliosis. From the fact that the child gradually became ataxic soon after he was three years old and became progressively worse, it is seen that it is a case of great rarity and is by no means easily classified. The author discusses various con-

ditions which some have included under Friedreich's ataxia, but he makes no mention of a syphilitic juvenile tabes dorsalis, to which, except for the extremely early age of the patient, his case bears no little resemblance.

REGINALD MILLER.

**Cobweb brain** ('*Journ. Amer. Med. Assoc.*,' 1910, II, p. 998).—**Hunt** details the clinical history and pathological findings in the case of an idiot in whom the cerebral hemispheres were so degenerated as to justify the term "cobweb brain."

T. R. WHIPHAM.

**Hemiplegia following acute infections** ('*Journ. of Amer. Med. Assoc.*,' 1910, II, p. 1247).—**Jones** and **Hamilton** report with others three cases of right-sided hemiplegia in children, two of which followed diphtheria and one lobar pneumonia. The cause of the condition seems to be uncertain.

T. R. WHIPHAM.

**Transcortical sensory aphasia** ('*Med. Press.*,' 1910, II, p. 545).—**Fröschel** saw a girl, aged 11 years, who could speak under excitement or imitate like a parrot, but could not conduct thoughtful conversation. The girl could only repeat the sounds, and the words did not appear to have a meaning. She was neither dumb nor deaf. The case was apparently one of congenital loss of word-memory.

T. R. WHIPHAM.

**Disseminated sclerosis in a boy, aged 6 years** ('*Guy's Hosp. Gaz.*,' 1911, xxv, p. 183).—**H. C. Mann** narrates this very unusual case, remarkable for three reasons: (1) The early age of the patient. (2) The rapidity of the disease to a fatal termination within six months. (3) Early appearance of mental symptoms and rapidly progressive dementia which led to difficulties in diagnosis, which was not definitely made until microscopic examination of the brain and spinal cord was carried out. The plantar reflex was flexor and the abdominal reflexes normal.

F. R. B. ATKINSON.

### Surgey.

**Three cases of branchial fistula in infancy** ('*El Siglo Medico*,' 1910, LVII, p. 582).—**Pedragosa** gives the notes of three cases seen by him; two were girls, one a boy. The fistulæ were all on the right side, two were close to the sterno-clavicular articulation, one opened just in front of the right ear.

M. D. EDER.

**Congenital defect of both femora** ('*Gaz. hebd. des Sci. Méd. de Bordeaux*,' 1911, XXXII, p. 207).—**Petit de la Villeon** relates the case of a boy, aged 13 years, who, to sight and palpation, appeared to have complete absence of both femora; radioscopy showed that the upper articular surfaces were normal, but the shafts were merely represented by osseous fragments. Walking was easily performed, but the gait resembled that of congenital dislocation of the hips. The legs, feet, head and trunk were normal, but the left arm had undergone intra-uterine amputation about the middle of the humerus. The family history was good, and there was no history of other deformities in the family. The author discusses at length the possible origin of such anomalies.

J. PORTER PARKINSON.

**Congenital absence of the pectoral muscles on the right side** ('*L'Echo. méd. du Nord*,' 1911, xv, p. 144).—**Leroy** and **Fontan** describe a man, aged 23 years, who had absence of superior and inferior portions of the pectoralis major and the pectoralis minor on the right side. The

clavicular part of the great pectoral was well developed and, indeed, somewhat hypertrophied. The pectoral muscle was composed of a clavicular portion and a superior and inferior sterno-costal portion. All or any one or two of these may be absent, the most frequent being a partial absence. This defect is usually accompanied by malformations of adjacent muscles such as the small pectoral, intercostals, trapezius, etc. The movements of the limb are but little affected.

J. PORTER PARKINSON.

**Congenital hydronephrosis** (*Journ. Amer. Med. Assoc.*, 1911, II, p. 110).—**Eisendrath** reports two cases, the first of which occurred in a horse-shoe kidney. The patient was a boy, aged 6 years, in whom symptoms began suddenly about two weeks previously with severe pain in the right side of the abdomen and vomiting. In the abdomen there was a distinct prominence above the level of the umbilicus. The temperature was slightly raised, the pulse 136, and the leucocyte count was 12,200, rising to 17,000. A diagnosis of appendicitis in a non-rotated appendix was made, but at the operation a horse-shoe kidney was found, the right end of which was converted into a translucent, thin-walled sac, while the left end presented a similar, though smaller, condition. On opening the sac a quantity of straw-coloured, clear, odourless fluid escaped. A drainage-tube was inserted and the wound healed by granulation in four weeks, the septic condition disappearing and convalescence being uninterrupted. The hydronephrosis had probably existed for a number of years, and from the absence of any marked dilatation of the ureters it is probable that the obstruction was close to the renal pelvis. The condition remained latent until infection occurred. The second case was a boy, aged 12 years, whose abdomen had been increasing in size for two years, although it had always been large. He voided large quantities of urine. The abdomen was prominent, especially on the left side, and a semi-fluctuating tumour could be felt in this region. The percussion note over it was dull. Cystoscopic examination revealed the flow of turbid urine from the left ureter, but ureteral catheterisation was impossible. The urine contained a large number of pus-corpuscles but no casts. The diagnosis of congenital hydronephrosis was confirmed by operation. The kidney was removed and drainage was inserted. The patient made an uneventful recovery in three weeks. The orifice of the ureter was greatly narrowed so as to scarcely admit even the smallest filiform bougie.

T. R. WHIPHAM.

**Traumatic rupture of hydronephrosis** (*Berlin. klin. Woch.*, 1910, xxxvi, p. 1435).—**Henes**.—A boy, aged 12 years, after a fall felt a severe pain in the right side of the abdomen, but was able to walk home. Vomiting and hæmaturia soon developed, and a tumour could be felt on the right side of the abdomen. Median laparotomy was performed, and the peritoneum of the posterior abdominal wall was seen bulging forward on the right. On puncture some blood-stained fluid was removed. The bulging peritoneum was then stitched to the abdominal wall and opened, when two litres of fluid were evacuated. Three weeks later the fluid escaping from the fistula became turbid and developed a urinous odour. The right kidney was then removed through a lumbar incision and showed a high degree of hydronephrosis through oblique implantation of the ureter and a perforation on its anterior surface.

J. D. ROLLESTON.

**Congenital cystic degeneration of the kidney** (*Med. Record*, 1911, I, p. 676).—**H. B. Mills** reports a case in a child, aged 14 months, which was

not diagnosed until operation was performed for a growth on the left side of the abdomen, which had been growing for seven months. The case had been diagnosed as enlarged spleen, hypernephroma and sarcoma of the kidney. The disease is a rare one, and the diagnosis extremely difficult. The prognosis is always unfavourable. This case terminated fatally five weeks after operation from consumption. The part of the body affected is not stated.

F. R. B. ATKINSON.

**Cystitis in children** ('*Rev. d'Hyg. et de méd. inf.*,' 1910, ix, p. 460).—**Marcel Deschamps** gives an account of the bacteriology of the disease and the source of the infection, drawing special attention to the *Bacillus coli communis* as a causative agent and its occurrence in an acid urine. Amongst the predisposing causes, he mentions, with a case to illustrate, a condition but rarely seen—congenital narrowing or stricture of the urethra. He divides the disease into three degrees of severity: the latent, the ordinary and the very severe: The first is usually mistaken for one of its symptoms—enuresis; the third is a septicæmic condition often leading to pyelonephritis. Treatment varies as to the severity; the point is to remove the predisposing and active causes. As an injection he recommends argyrol 1–20, as it is both efficacious and painless.

RUPERT FARRANT.

**Urethral prolapse in girls** ('*Jahrb. f. Kinderheilk.*,' 1911, lxxiv, p. 1).—**H. Brünnig**.—A well-developed girl, aged 8 years, who had had some hæmorrhage from the genitals six months previously, suddenly developed frequent and painful micturition. A red cylindrical swelling, three fifths of an inch long, was seen protruding between the labia majora. On examination under an anæsthetic the genitals were found to be normal, and the swelling was found to be a total prolapse of the urethral mucous membrane. A radical operation was performed, and complete recovery followed. On microscopical examination the vessels of the part, especially the venules, were seen to be much dilated and engorged. In some places there was a round-celled infiltration, and in others hæmorrhage. Including the present case, Brünnig has collected 76 cases in children between one and fifteen years of age. The condition is most frequent between eight and eleven years. Two varieties are described: (1) an acute form with sudden onset, due to trauma (attempted rape and blows on the abdomen), or to violent contraction of the abdominal muscles as in whooping-cough, constipation and dysuria. (2) A chronic form with gradual onset, due to inflammation of the urogenital tract or to congenital weakness of the tissues. The condition may be mistaken for prolapse of the uterus, polypus or other tumours. The prognosis is favourable if the prolapse is recognised early and suitable treatment employed, otherwise inflammation and even gangrene may ensue. Small prolapses may be cured by cold compresses, by the application of towels soaked in lead or boracic lotion, by astringents or caustics such as tannin and nitric acid, or by radial cauterisation with Paquelin's cautery. If these measures are not successful in a few days radical operation should be performed.

J. D. ROLLESTON.

**Tuberculous peritonitis: cure following operation in the dry non-exudative form** ('*Arch. of Ped.*,' 1911, xxviii, p. 284).—**Bradshaw** relates the case of an infant in which at the operation the intestines were found matted together with the usual appearance of tuberculous peritonitis. The cavity was absolutely dry, and a chain of greatly enlarged mesenteric

glands surrounded the cæcum like a rosary, corresponding to an elongated sausage-shaped mass, which was made out by a previous examination under chloroform. The glands were so embedded in plastic exudate and the intestines were so matted together that it did not seem feasible to do anything farther than to close the wound quickly. A marked improvement followed the operation, but after five weeks the infant became worse than before, so that a second operation was decided upon. An incision being made on the side of the abdomen opposite to the first operation, the same tuberculous appearance of the gut was seen as was found at the first operation, only in a more exaggerated form. The infant recovered from the severe operation and did well. He relates the case, as it is generally believed that surgery in the adhesive variety is of little avail, and is rarely recommended. In discussing the ætiology of tuberculous peritonitis he says that "although there is a difference of opinion as to the extent of the rôle bovine infection plays in this disease, there is a fairly unanimous opinion that a certain percentage of cases of tuberculous peritonitis arises from milk, rendering necessary a careful supervision of the milk supply."

J. E. BULLOCK.

**The diagnosis of hip disease** (*Rev. d'Hyg. et de Méd. inf.*, 1910, ix, p. 482).—**Ducroquet** emphasises the importance of an early diagnosis with its effect on the subsequent treatment and prognosis. The gait, pain and inflammatory swelling in the iliac fossa are the early signs. Contraction of the capsule is the pathognomonic sign. This contraction of the capsule causes the deformity and limitation of movement; it is not due, as Bonnet thinks, to a distension of the joint with fluid. A knowledge of these signs makes the diagnosis from other conditions, such as hysteria and psoas abscess, easy.

RUPERT FARRANT.

**The causation and prophylaxis of deformities of the knee due to tuberculosis** (*Arch. de Méd. des Enf.*, 1911, xiv, p. 241).—**C. Ducroquet** and **V. Veau**, in a short account of the two main deformities produced, are unable to account for the early position of semi-flexion, though they discredit the commonly accepted theory that it is due to the joint adopting the position of maximum rest. The later triple deformity they ascribe to walking, or to imperfect immobilisation of the joint. For their prevention they recommend the early application of a plaster, which must extend from the ischium and the great trochanter above to the os calcis and external malleolus below.

RUPERT FARRANT.

**The defective attitudes of the hip** (*Rev. d'Hyg. et de Méd. inf.*, 1911, x, p. 1).—**C. Ducroquet** gives a detailed description of the mode of progression in the various positions in which an ankylosed hip may be found. The treatment he adopts for vicious ankylosis following congenital dislocation of the hip, unless the bone is atrophied, is that of forcibly straightening the limb with the aid of a pelvic fixation apparatus. His results with six months' after-treatment appear most satisfactory.

RUPERT FARRANT.

**The surgical treatment of talipes equino-varus in children** (*Paris Méd.*, 1911, p. 471).—**Lamy** gives a short account of the operative treatment of this deformity, and is of the opinion that the osteoplastic operation of Ogston is the best, *i. e.* removing the tarsal bones that prevent

reduction, whilst leaving their cartilaginous extremities and allowing the spaces left to be filled with blood-clot for the formation of new bone.

RUPERT FARRANT.

**The treatment of club-foot in infancy** (*Interstate Med. Journ.*, 1911, xviii, p. 465).—**Silver** has an article on this subject, which is too long and too detailed for abstraction. Reference must be made to the original. In the same journal, p. 520, will be found a review of recent literature on the same subject.

T. R. WHIPHAM.

## Treatment.

**Potassium nitrate in measles** (*El Siglo Medico*, 1911, lviii, p. 4).—**Pedragosa**, writing after the use of this drug for some years and in two recent epidemics, recommends its use in measles. It shortens the disease and diminishes complications; has no bad effects. It must not be given to children under three years. After three years he gives 0.25 grm. in twenty-four hours, increasing the dose up to 2 or 3 grm. during the twenty-four hours for children of twelve to fifteen years.

M. D. EDER.

**Treatment of whooping-cough** (*Therap. der Gegenw.*, July, 1910, *abst. Journ. A.M.A.*).—**Bradt** ascribes the symptoms of whooping-cough to a local process in the upper air-passages, and advises local treatment. He uses a mixture of iodine and phenol .5 parts with 1.5 parts of potassium iodide and fifteen parts of glycerine in 100 parts of water, and with this he swabs the naso-pharynx for two or three seconds once a day. The patient should also be kept in the open air as much as possible.

T. R. WHIPHAM.

**The dosage of tuberculin** (*Arch. of Pediat.*, 1911, xxviii, p. 93).—**Hamill** states that the opinions regarding the dose of tuberculin for the treatment of tuberculosis in early life are largely in favour of the smaller doses. For children under one year the dose has varied almost without exception from  $\frac{1}{12000}$  to  $\frac{1}{8000}$  mgrm., and for children from one to twelve years of age from  $\frac{1}{4000}$  to  $\frac{1}{1000}$  mgrm. He gives in detail the principles upon which Schlossmann (*Deutsch. med. Wochens.*, 1909, xxxv, p. 289) advocates remarkably high doses ( $\frac{1}{100}$  mgrm. to  $\frac{1}{10}$  grm.), which are considered dangerous by English observers. He concludes that tuberculous lesions, especially the glandular types of tuberculosis, are much more favourably affected by tuberculin than the pulmonary type, especially those with generalised symptoms.

J. E. BULLOCK.

**Recalcification in children** (*Arch. de m'ed. des Enfants*, 1911, xiv, p. 213).—**Comby**, basing his treatment on the observation of Perrier, that when dental caries is checked tuberculosis is retarded, and that tuberculous developments are coincident with dental caries, accompanied by phosphaturia, advises, in addition to general hygienic treatment by rest, open air, and good food, a careful avoidance of over-feeding, which causes dyspepsia and decalcifying intestinal fermentations. He prescribes a diet consisting of three meals a day, free from fats and acids and an alkaline water to drink; medicinally he orders a powder containing carbonate, phosphate and chloride

of calcium before two chief meals for ten days, followed by arseniate of soda, twice a day for ten days.

J. E. BULLOCK.

**Treatment of surgical tuberculosis by sun-rays** (*Paris Méd.*, 1911, i, p. 140).—**Rollier** describes the treatment carried out by him at Leysin continuously throughout the year. When the sun fails resort is had to radio-therapy for adults and Bier's congestion treatment for children. The direct sun-rays, without the inter-position of glass or concentration of radiation by lenses, is used exclusively. The air of high mountains, being free from the dust and micro-organisms which are found in the plains, allows the full effect of the chemical, luminous, and heat-rays to be obtained. Care is taken to avoid solar erythema and consequent dermatitis; as the skin becomes gradually bronzed by the sun a longer exposure is tolerated. Splints and bandages are removed as far as possible, so that the affected part may be exposed to the full rays of the sun. The treatment is applied to all forms of tubercular disease. It is found that cicatrisation is promoted and microbic life destroyed; the improvement, shown by illustrations, after a year's treatment is remarkable.

J. E. BULLOCK.

**Blood-letting in children** (*Journ. Amer. Med. Assoc.*, 1910, II, p. 1781).—**Stern**, following the teaching of Baginsky, states that blood-letting is indicated in affections of the heart and circulatory organs and diseases of the nervous system in children. Thus it may become necessary in pleuro-pneumonia, broncho-pneumonia, capillary bronchitis, with hyperæmic manifestations, chronic heart disease, rapidly succeeding convulsions caused by hyperæmia of the brain, and grave nephritis with uræmic symptoms. The action of full depletion is a merely mechanical one: the right side of the heart or the hyperæmia of the brain is relieved. In chronic hydræmia and cachectic states blood-letting is distinctly contra-indicated. According to Baginsky, if the blood escapes freely a fifteenth or a twentieth part of the entire blood of the child may be withdrawn with impunity. The following table shows the amount that may be safely abstracted at the different ages:

| Age.            | Body-weight.    | Amount to be withdrawn. |
|-----------------|-----------------|-------------------------|
| 1 year . . . .  | 10 kilog. . . . | 25-45 c.c.              |
| 3 years . . . . | 12·5 " . . . .  | 45-65 "                 |
| 5 " . . . .     | 16 " . . . .    | 50-73 "                 |
| 7 " . . . .     | 20 " . . . .    | 50-85 "                 |
| 10 " . . . .    | 24·5 " . . . .  | 85-110 "                |
| 14 " . . . .    | 38·5 " . . . .  | 100-170 "               |

On occasions, and especially in cases of uræmia, even more blood may be withdrawn. Arteriotomy should be employed in cases of existing or imminent pulmonary oedema, but in most cases venesection is resorted to. The median, median cephalic or median basilic veins are the best suited for the purpose, or one of the saphenous veins. Wherever possible, however, the author recommends venepuncture, and a number of veins may be punctured until the desired amount of blood has been secured. In the child this operation is more difficult than in the adult on account of the slight prominence of the veins and the fat tissue of the arms.

T. R. WHIPHAM.

## Reviews.

THEORY AND PRACTICE OF THYROID THERAPY. By HERBERT EWAN WALLER, L.R.C.P., M.R.C.S. Pp. 154. London: John Bale, Sons and Danielsson, Ltd. Price 5s. net.

THE scope of this book is indicated in its sub-title—"Being some experiences of the results of thyroid medication, with deductions concerning the influence of thyroid secretion in health and disease, and certain effects of drugs and various circumstances upon thyroid secretion." The author has a considerable enthusiasm for his subject, and writes fully of his observations and theories. He concludes that "some understanding of thyroid matters is essential to the practitioner in treating every case, and will materially improve his success in the treatment of fully one fourth of his patients."

Mr. Waller accepts Dr. Leonard Williams' view as to the function of the thyroid gland in fixing the calcium salts of the body, from which it is deduced that a failure to assimilate lime-salts is due to thyroid depression. From the point of view of children's diseases the most interesting chapters are concerned with the relationship of thyroid inadequacy to rickets and dental caries. Other subjects which are discussed include nocturnal enuresis, enlarged tonsils and adenoids, obesity, goitre, and eczema. The book closes with some hints on the administration and dispensing of thyroid.

The volume is written in a free, almost conversational manner which renders it very readable, but such a style is with difficulty made successful in treating some of the highly debatable points raised. The author's presentation of his case would be improved by greater attention to the condensation and precise arrangement of his arguments.

R. M.

MEDICAL REVOLUTION. By SYDNEY W. MACILWAINE, M.R.C.S., L.R.C.P. (retired). London: P. S. King & Son, 1911. Price 2s. 6d. net.

THE author has emerged from his retirement to write a small book which may be divided into two parts—one constructive and the other destructive. The writer takes objection to Virchow's statement that every chronic disease is rooted in an organ, and believes that the causation of disease is not sufficiently studied, and until the cause is discovered a diagnosis cannot be said to be made. He divides all causes into extrinsic and intrinsic, the former parasitism, poisoning, and traumatism, and the latter incomplete development, constitutional defects, overwork, deficient work, and wear and tear. The second part contains the author's views on the inadequacy of hospitals as at present constituted for the prevention of disease, and the suggestion that around each large hospital there should be an institute for the accommodation of four or five practitioners, who should be in touch with the hospital staff, and whose primary duty would be to discover why the various diseases occurred. Institutes for trained nurses should also be established in the same districts. The book is easy to read, and contains many excellent ideas.

F. R. B. A.

THE FEEBLE-MINDED IN ONTARIO: FIFTH REPORT FOR THE YEAR 1910.  
By Dr. HELEN MACMURCHY. Toronto: L. K. Cameron, pp. 66, 1911.

Dr. MACMURCHY's instructive report begins with a reference to the interest taken in her work by the lay and medical press, by fellow alienists in this country and abroad, and by the general public in America. Thus, in Nova Scotia a league of 150 persons has been formed to elaborate a scheme for the care of the mentally deficient and to bring it to the notice of the Government. Public lectures have been given on this subject by Dr. W. B. Caley, formerly medical officer to one of the Yorkshire education authorities. A most practical suggestion comes from Ontario, where Mrs. Willoughby Cummings suggested that parents of defective children should be persuaded to purchase Canadian Government annuities, which would provide for their future. The extent of the evil and the scanty accommodation for its superintendence and prevention is shown by the fact that in Toronto 92 defective children have been born out of 132 illegitimate unions, and that in Ottawa city there are at least 24 persons of deficient intellect; 4 of these have violent tendencies and are at large.

Dr. MacMurphy graphically portrays the evils of the *laissez-faire* policy, which result in crimes of incest and murder, and gives examples of how difficult it is to prevent pregnancy occurring, even when the cases are watched by careful parents in respectable middle-class homes. A typical case of a male defective is described, showing the comparative ease with which low-class labour is obtained, and enforcing the lesson that the ordinary employer discharges these unfortunates after a week or two, with the result that they commit some petty theft and have to be imprisoned till a vacancy occurs in some special institution. A description is then given of the cases in the Haven and Industrial Refuge. Stress is laid upon the marked histrionic ability of some of these defectives, and of the considerable artistic skill possessed by those afflicted with uncontrollable erotic impulses. Great improvement has resulted from the careful teaching of the homes. A case, who could only nurse a doll, can now read, write, and wash and iron clothes beautifully. She has also committed three chapters of Scripture to memory—a marvellous achievement!

The Report concludes with an account of what is being done in other parts of the American Continent and in Europe.

In the United States there are 43 schools for 17,900 defective children. In Iowa University there is a special department for the study of amentia, and, best of all, Prof. Stanley Hall is devoting his genius to this difficult subject. C. R.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY, vol. xxii, 1911.  
New York: E. B. Treat & Co. Price not stated.

THIS volume, reprinted from the 'Archives of Pediatrics,' contains the proceedings and papers of the meeting held in 1910, under the Presidency of Prof. Edsall, at Washington, D.C. The papers have therefore appeared already, but attention may be briefly drawn to some of the more interesting. Poliomyelitis is fully considered from several points of view; the experimentally produced disease and its relation to human beings are dealt with by Flexner, and the clinical bearings are discussed in papers by Emmett Holt and Snow. Morse studies the value of Brudzinski's "neck sign" and of the contra-lateral reflex in the diagnosis of meningitis in

infancy and childhood, and finds that though they never occur in healthy infants their absence does not exclude meningitis. Dunn writes on the cyto-diagnosis of tuberculous meningitis, and Huber gives a report on eighty-six cases of empyema. The bacteriology of the blood in early life has been investigated in forty-four infants during life and in fifteen necropsies by Churchill and Clark, and gave rise to some discussion as to the practical application of blood-cultures in infants on account of the difficulty of obtaining sufficient blood from the small veins available.

H. D. R.

THE PHARMACOPŒIA OF THE QUEEN'S HOSPITAL FOR CHILDREN. Compiled by a Committee of the Medical Staff. Fifth edition. Pp. 73, interleaved. H. K. Lewis, 1911. Price 2s. 6d. net.

IN addition to the formulæ this compact little work contains advice to parents on the care of their children's teeth, directions for bringing up children, for the management of children after removal of tonsils and adenoids, and for the care of paralysed children and for those suffering from paralysis, ringworm, and impetigo.

J. D. R.

REPORT OF THE POLIOMYELITIS COMMITTEE OF THE MEDICAL ASSOCIATION OF THE DISTRICT OF COLUMBIA: EPIDEMIC 1910.

THIS report follows the lines of others from different parts of America. In all, some 506 cases were investigated. The results confirm what is already known as to the epidemiology of the disease. In the city of Washington the cases were spread over a wide area and appeared uninfluenced by sanitary conditions. July and August showed the greatest case-incidence. It is interesting to note that the season was not unduly hot, but that the rainfall was much below the average. The summer weather coincided very accurately with the duration of the epidemic. The sex-incidence showed the usual peculiarities; under the age of fifteen there were 130 males and 92 females affected; above this age there were 21 males to 3 females. The youngest patient was four months old, and the oldest sixty-four years. The maximum incidence was during the second and third years of life. The case-mortality was 3 per cent.

In one locality, prior to the outbreak of the epidemic in human beings, there was an outbreak of a disease with paralytic symptoms in ducks and chickens. A man who performed an autopsy on two ducks having this disease shortly afterwards contracted poliomyelitis. Careful investigations, however, failed to show any relation between the disease in the animals and poliomyelitis in human beings.

The cerebro-spinal fluid was examined in 11 epidemic cases by Drs. Hough and Lafora. In very early instances they were able to note an increase in the polymorphonuclear cells which was replaced within four or five days of the onset by the usual lymphocytosis. From their findings these observers are inclined to favour a protozoal nature for the virus of the disease though recognising that such a conclusion is not in accord with the results of other workers.

Special inquiries were made into the occurrence of inflammatory conditions of the respiratory mucous membranes and of the throat at the onset of the disease, but these were found as a general rule to be conspicuously absent.

The report is reprinted from the 'Washington Medical Annals,' vol. x, No. 2, May, 1911.

R. M.